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ABSTRACT

The EMERGENCE project reviewed literature on eWork characterization, extent, and distribution and dynamics of its development in 15 European Union (EU) countries and 3 newly associated states (NAS). It identified 12 factors that influenced international diffusion of eWork. Employer survey results showed individual forms of eWork were outweighed in importance by collective forms--groups of workers at a remote office-type location linked to the employer. A model was developed to estimate eWork across the EU and forecast growth. Survey results showed the following: (1) outsourcing eWork primarily involved relocations in Europe; (2) eServices' selling points were technical expertise and low cost; and (3) trends in corporate restructuring were spatial concentration of activities to yield economies of scale, activities' expansion and decentralization to tap remote labor markets or capitalize on wage differentials, and access to knowledge through cooperation over distance. Small and medium-sized enterprises captured important segments of the remote business services market, especially software development and creative work. Distinct European paths to an information society were identified, including high-tech, highly developed social democratic; "corporatist," with more hierarchical occupation-based welfare systems; neo-liberal, using eWork to encourage external forms of flexibility; southern Europe with high use of eOutsourcing mostly within national borders; and NAS with extremely high levels of eOutsourcing, mostly

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outside national borders. (Appendixes include logistic models of eWork and eSupply and 128-item bibliography.) (YLB)

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When Work Takes Flight

Research results from the EMERGENCE project

Edited by U Huws

EMERGENCE

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The EMERGENCE project website, **www.emergence.nu**, carries two important tools:

an interactive **eReadiness database**, for comparison of global countries and European regions using a wide range of indicators

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research results from the EMERGENCE project

edited by
U Huws

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CIREM, Fundació Centre d'Iniciatives i Recerques Europees a la Mediterrània, Spain IES aims to help bring about sustainable improvements in employment policy and human resource management. IES achieves this by increasing the understanding and improving the practice of key decision makers in policy bodies and employing organisations.

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This report sees the end of the EMERGENCE project, which has spread since its conception, around the globe. During its three-year period of research it has involved very many people, three international conferences and a long list of publications and papers, and eight newsletters. The lead team at IES must be acknowledged for their extensive contribution to the development and achievement of the project: Peter Bates, Nick Jagger and Siobhán O'Regan. Andy Davidson produced and maintained the project's website and publication of the many reports, helped latterly by Charlie Bass with the final four publications. Finally, and by no means least, thanks go from the entire project team to Hilary Williams who has ably administered the project, its conferences and its international meetings from various locations as a true global eWorker herself.

Ursula Huws
EMERGENCE project director

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- The final group of countries consists of Central and Eastern European Accession States. The three states studied by EMERGENCE (Czech Republic, Hungary and Poland) also have extremely high levels of eOutsourcing. In this case, however, a very high proportion of this outsourcing is outside national borders. Furthermore, the use of eWork is not distributed throughout the economy but concentrated in certain sectors (especially business and financial services) and size categories (the largest firms, many of which are foreign owned). It seems likely that these high levels of eWork have a very different explanation from those in Southern Europe. On the one hand, it is undoubtedly the case that these states have become attractive sites for relatively low-cost high-skill business services, such as software development and are exporting eServices to the rest of Europe and elsewhere in the world. It is also the case, however, that in the rapidly-changing environment of these transitional economies there are strong historical reasons why specialist skills are lacking in many organisations, particularly organisations which date back to the 1980s or earlier. In such cases it is necessary to import external expertise. This provides an explanation for why these countries score highly on both the supply and demand sides of the market in eServices. However, this is not necessarily an indication of market strength.

Towards a future research agenda

The report concludes that EMERGENCE has opened up a large new field of study in a previously under-investigated area. The project has identified a number of research topics with high policy relevance, some of which are already being addressed by EMERGENCE-related projects. These include:

- the identification of new indicators of eWork and the eEconomy (currently being addressed by the STILE project)
- further qualitative investigations of collective forms of eWork relocation beyond current EU borders (partially being addressed by the Asian EMERGENCE project)
- further investigations into the impacts of eWork for SMEs, especially micro-enterprises, both in the EU and in Accession States (partially addressed by extensions of EMERGENCE in Belgium, Denmark and Ireland and partially by other IST-funded projects, such as eGAP)
- further investigations into the impacts of these developments for regional development, especially in peripheral and rural regions
- investigations into the implications of these developments for citizenship, worker organisation and representation and the Social Dialogue at regional, national, European and international levels

- the development of methodologies for analysing national differences in the development of a global knowledge-based economy.

1. Introduction

The EMERGENCE project[1] was set up by a consortium of partners in Australia, Austria, Belgium, Canada, Denmark, Hungary, Italy, Sweden and the UK, under the direction of the Institute for Employment studies, with core funding from the European Commission's Information Society Technologies Programme.

The context was twofold. On the one hand, in 1999, when the proposal was developed, the 'new economy' was largely seen, both by media commentators and by many politicians as an enormously powerful engine of economic growth, with the potential to create large numbers of new jobs, transform existing ones and regenerate regional economies. On the other hand, there was a fear that in this new economy 'anything could be done by anyone, anywhere' and that the use of Information and Communications Technologies (ICTs) might bring about the 'death of distance' and result in a large-scale relocation of work away from the more developed economies of Europe and North America to lower-waged regions in the South and East. In neither case were these assumptions backed up by much solid empirical substantiation. Indeed, a close inspection of the evidence revealed that extraordinarily little research had been carried out to measure the extent to which ICTs were in practice being used to bring about a relocation of work. This was the challenge which EMERGENCE set itself.

For its three-year programme of work (from 2000-2002) the project set some extremely ambitious goals, including:

- to map and quantify the new international division of labour in information services resulting from telematic applications
- to identify key indicators to enable systematic monitoring of trends in the future
- to develop a model for forecasting future employment patterns in knowledge work

[1] The acronym EMERGENCE stands for 'Estimation and Mapping of Employment Relocation in a Global Economy in the New Communications Environment'.

- to identify strengths, weaknesses, opportunities and threats posed by the development of eWork relocation at the level of existing and applicant EU regions and globally at a country level
- to make recommendations to statistical offices for the future monitoring of eWork trends
- to investigate the dynamics of eWork relocation, including the implications for management, for locational choice, for the supply and demand of skills and to identify the social groups most at risk of exclusion or marginalisation in the new global division of labour in information work
- to develop an interrogable database to enable easy access to the research results and a toolkit designed to assist those using these results to develop sustainable regional development policies which take advantage of the opportunities opened up by eWork
- to disseminate the results widely though newsletters, a website, conferences, reports and other means.

In formulating these objectives, we were aware that they were extremely challenging, not to say risky, involving exploratory research into largely uncharted territory. The research tasks were made particularly difficult by a number of factors, including:

- the impossibility of addressing these questions within the confines of a single academic discipline, necessitating an interdisciplinary approach involving collaboration between economists, geographers, social scientists, political scientists and business analysts
- the speed of change, leading to the rapid obsolescence of information and difficulties in the identification of stable indicators for comparison over time
- the lack of clear definitions of the new phenomena under investigation
- a convergence between industrial sectors (the traditional units of analysis in studies of economic change) resulting from mergers, cross-ownership, technical change and the emergence of new sectors, yet to be classified
- a lack of existing statistics on trade in services or new occupations or forms of work
- the lack of international comparability of such statistics as already existed
- the lack of a clear analytical framework
- scarcity of up-to-date case study material.

In order to address these objectives, a series of inter-related research activities was carried out. This report summaries the results of this research.

EMERGENCE also made these results available in a number of other ways designed to make access easier for different audiences. They are published as separate reports, newsletters and briefings and on the project's website at www.emergence.nu. They include:

- the proceedings of two major international conferences (www.emergence.nu/events)
- eight EMERGENCE newsletters (www.emergence.nu/news)
- an interactive 'eReadiness' database that can generate graphs and tables to compare countries and European regions with each other and with World and European averages across a range of different variables relating to eWork (www.emergence.nu/erdb)
- a web-based Regional Development Toolkit designed to help users draw up a regional development strategy to develop employment on the basis of eWork (www.emergence.nu/toolkit)
- a discussion paper on statistical indicators of eWork (www.emergence.nu/pubs)
- eight summaries of reports of work carried out by the EMERGENCE project in Europe, plus reports from sister projects in Australia, Denmark, Belgium, Ireland and Asia (www.emergence.nu/pubs).

This report is not intended to describe each of these deliverables in detail. In our view, the best way to do this is to visit the website or read the individual reports. Rather its purpose is to summarises the main substantive research results of the project and to draw out the conclusions which emerge from these results. The research modules which provide the raw material for this process are as follows:

- a review of the existing literature and statistics on the subject, including an experimental cluster analysis of the available statistics carried out in order to generate hypotheses to be tested in subsequent stages of the research
- a major survey of 7,268 larger (>50 employee) establishments in the EU (15) countries plus Hungary, Poland and the Czech Republic. This was subsequently augmented by the results of supplementary surveys of smaller establishments (<50 employees) carried out in Denmark and Ireland and a comparable survey of establishments of all sizes in Australia.
- an analysis whereby the results of the EMERGENCE establishment survey were combined with those from official statistical sources in order to model eWork in Europe and develop some projections of its growth

- sixty two case studies of the relocation of eWork using ICTs from a 'source' location in one European region or country to a 'destination' in another
- a study of the implications of these combined findings for SMEs
- a study of the implications of these combined findings for Southern Europe (drawing on the research results from Greece, Italy, Portugal and Spain)
- a study of the implications of these combined findings for Central and Eastern European Accession States (drawing on the research results from Hungary, Poland and the Czech republic).

The report concludes with a discussion of the new research agenda opened up by this work.

2. The Context of EMERGENCE'S Work: the Existing Evidence

2.1 The literature

The literature on the global information economy is vast, crossing as it does the disciplines of economics, sociology, geography and technological forecasting, to name but a few, and ranging from the highly technical or theoretical at one extreme, to the popular, journalistic and applied at the other. It is beyond the scope of this report to provide more than an illustrative overview of this literature. Our main concern has been to scan it for any light it might shed on the characterisation, extent and distribution of eWork and the dynamics of its development.

2.1.1 The new economy

The notion that we are witnessing the emergence of a 'new economy' is very widely discussed, in the pages of general economic and 'new media' journals, such as *The Economist*, the *Wall Street Journal*, the *New York Review of Books* and *Wired* and in more specialist publications such as *New Economy Watch*. The phrase is used in several distinct senses.

One of the most important of these is as a descriptive term, to define the new industries which have developed using the new digital technologies – the 'dotcom' companies, a loosely defined group of overlapping sectors which include software development, website development and management, broadcasting, publishing, multimedia and other content provider industries, together with hardware and telecommunications companies. The most serious attempts to date to delineate these sectors, sometimes known as the 'digital economy' have been by the US government's Department of Commerce (US Department of Commerce, 2000), Industry Canada (Howitt P (ed.), 1998), and by the OECD (in progress). At the time of writing, Eurostat is carrying out a revision of sector codes to address this issue.

The term is used in a more abstract and theoretical sense by economists, like Danny Quah (Quah, 1997, 1998) who argue that we are entering an era in which increasing proportions of added value are created by inputs of 'knowledge' which, because it is

inappropriable, does not obey the same economic laws as consumable items, such as raw materials. Quah's argument that the new economy is 'weightless' has been taken up and popularised by authors like Diana Coyle (Coyle, 1997), Charles Leadbeater (Leadbeater, 2000) and others (Tapscott, 1998, 1995; Neef, 1998). Some of this literature was critiqued by the author in 1999 (Huws, 1999) and subsequently discredited by the bursting of the dotcom bubble in 2000.

These works offer an array of examples to illustrate their point, some of which provide useful insights into the dynamics of eWork. However they fail to define 'knowledge work' in a manner which makes it possible to identify 'knowledge workers' in the occupational statistics.

Some attempts to theorise 'knowledge work' have been made, for instance by Luc Soete (Soete, 1996) who distinguishes three forms in which knowledge contributes to growth'. These are 'easily transferable codifiable knowledge', 'non-codifiable knowledge, also known as tacit knowledge (skills)' and 'codified knowledge'. These categories are not, however translated into occupational definitions.

2.1.2 The delocalisation of work

This literature on the new economy is closely associated with a group of publications with a more geographical focus, which argues that the facility with which the new technologies allow work to be relocated is bringing about 'the end of geography' (O'Brien, 1992) or the 'death of distance' (Cairncross, 1997). These generally up-beat publications suggest that these developments bring unprecedented new opportunities to previously neglected regions. They can, however, be contrasted with a slightly older geographical literature arguing that regional concentration, rather than regional dispersion of 'information work' is the most likely outcome of this use of ITCs. Some key figures in this field are David Harvey (Harvey, 1989, 1990), Saskia Sassen (Sassen, 1991), Doreen Massey (Massey, 1984), Mitchell Moss (Moss, 1987a, 1987b; Moss and Duncan, 1986) and a group of researchers at the Centre for Urban and Regional Development Strategies (CURDS) at the University of Newcastle-upon-Tyne (Robins and Hepworth, 1988; Robins and Gillespie, 1988; Gillespie, 1993; Gillespie and Hepworth, 1986).

Again, we find a wealth of anecdotal evidence in these publications illustrating that work is indeed being delocalised throughout the globe with the support of digital technologies. However these studies present no empirical research, or statistical data which would make it possible to estimate the extent or distribution of this relocated employment.

2.1.3 Virtual enterprises

The literature on delocalisation, much of it from the perspective of organisational theory, overlaps considerably with the literature on 'virtual enterprises', based on a notion that organisations can no longer be defined in terms of the physical premises that they occupy, or indeed their formal contractual relationships with each other or with their employees.

The early publications on virtual organisations for instance by Ettighoffer (Ettighoffer, 1993), were in turn linked with the voluminous literature on eWorking (Huws, 1996) and on various forms of organisational restructuring such as 'Business Process Re-engineering', the most famous proponent of which was Michael Hammer (Hammer and Champey, 1994; Hammer, 1996) but which was also addressed by other authors, such as Colin Coulson-Thomas and colleagues (Coulson-Thomas, 1994) Max Boisot (Boisot, 1995), and others (Magnelli and Klein, 1996). Such publications focused mainly on the various forms that restructuring might take and how they could be introduced.

More recently, attention has shifted outwards from the individual 'virtual' organisation towards its relationship with its supply chain, as in David Oates's study of outsourcing and the virtual organisation (Oates, 1998), some of the contributors to Cary Cooper and Denise Rousseau's collection of essays on virtual organisations (Cooper and Rousseau, 1999) and the work of Bob Norton and Cathy Smith on the subject (Norton and Smith, 1998).

Once again, we find fascinating case study material here, but nothing that would enable us to pick out 'virtual' organisations from non-virtual ones in the economic statistics.

2.1.4 Nomadic work

Apart from the literature on delocalisation, there is a related body of work on the growing mobility of workers and the use of ICTs to support peripatetic work, encapsulated by Tsugio Makimoto's phrase 'Digital Nomad' (Makimoto and Manners, 1997).

There is a general agreement in this literature that mobile working is as important as, if not more important than home-based eWorking. Makimoto estimates that in the future hot-desking will become widespread, with large corporations planning their offices on the basis of one workstation for every four staff members, suggesting that such workers will typically spend three-quarters of their working time away from base, much of it working while on the move. Similar forecasts have been made by a number of industry commentators, including Bill Gates (Gates, 1996).

Despite this, very little work has been done to establish the prevalence or characteristics of mobile eWorking. A survey of

Practical Computing readers we carried out in the UK in 1990 (Huws, 1990) forms a partial exception but whilst giving some useful information about their characteristics, this study could not provide information about the prevalence of this form of working.

2.1.5 Future of Work

The literature on the future of work which takes some account of the impact of ICTs on work location goes back to the 1970s, and includes the work of such well-known futurologists as Daniel Bell (Bell, 1973) and Alvin Toffler (Toffler, 1981). Unsurprisingly, such books contain a great deal of speculation about changes in the location of work but little in the way of concrete definitions.

In the 1990s, a new genre of literature on the subject emerged in the United States, with titles like 'When Work Disappears' (Williams, 1996), 'the Jobless Future' (Aronowitz and DiFazio, 1994) and 'the End of Work' (Rifkin, 1995), which, as these titles suggest, contends that the cumulative impact of technological change is not so much to relocate employment as to destroy it.

In some cases, the arguments are similar to those used by some of the more pessimistic authors of studies about globalisation, such as William Greider (Grieder, 1997): that as production is automated, the number of production workers will shrink, thus leaving a smaller population with sufficient income to buy the products of the newly automated factories, thus leading to a crisis of overproduction which will result in mass unemployment both in developed and developing countries. These ideas have been challenged by some economists, including Paul Krugman (Krugman, 1999).

2.1.6 Globalisation

This brings us to the wider subject of globalisation. At the most general level, there have been several major works which have attempted to analyse the dynamics of globalisation and its relationship with 'informatisation' or the development of a 'networked economy', the best-known of which is perhaps the monumental three-volume opus by Castells (Castells, 1996, 1997, 1998). Another sociologist who has paid serious attention to the subject is Anthony Giddens, not only in his own writing (Giddens, 2000), but, together with Will Hutton, in bringing together other important thinkers on the subject (Hutton and Giddens (eds), 2000).

Other significant recent contributions to the general discussions on globalisation have included John Gray (Gray, 1999), James Mittelman (Mittelman, 2000) and Michael Hart and Antonio Negri (Hart and Negri, 2000).

Perhaps the most important critique of a notion of globalisation as an inevitable and undifferentiated tendency imposing a uniform market model throughout the world comes from the Varieties of Capitalism school (Hall and Soskice (eds), 2001). This points to the continuing power of national institutions to shape the particular forms of development in any given context.

There is some disagreement in the literature about precisely how globalisation is to be characterised, its causes and dynamics, and some economists, such as Paul Hirst and Grahame Thompson (Hirst and Thompson, 1996) are even sceptical about the extent to which globalisation can be said to be a real phenomenon.

Nevertheless, there seems to be a general consensus that it is becoming easier and easier to relocate work around the globe, that this may change the characteristics of regions and their position in the new global economy (with Castells, Hutton and Giddens arguing that this may well lead to increasing differentiation between regions) and with some commentators arguing that there will be an increasing homogenisation between different national styles of economic management and forms of capitalism, although others continue to point to the importance of specific national patterns. There is also general agreement about the growing dominance of transnational corporations, which not only play a critical role in determining what employment gets located where, but also play an increasingly important part in shaping work culture, regardless of where it is located.

Whilst they greatly enrich the discussions about these developments, what these books fail to do is to offer a clear conceptual framework within which it is possible to isolate 'information work' and study its locational dynamics in the context of globalisation and technological change.

2.1.7 Empirical studies

A final source of information on eWork location is the results of various surveys which have been carried out on the extent of partially or fully home-based eWorking or of other forms of remote work, such as call centre work. We have reviewed the evidence on eWorking extensively elsewhere (Huws, 1996; Huws, Jagger, O'Regan, 1999), so will not repeat this here. These studies illustrate the extent to which work processes have already been adapted to enable work to be carried out remotely and provide general evidence of the extent to which employers and individuals are making use of Information Society Technologies to work remotely. However before EMERGENCE embarked on this task, such surveys failed to provide evidence of large-scale relocation of whole functions to remote regions or outside national boundaries. Furthermore, most studies of home-based eWorking have been carried out in developed countries, such as Europe, the United States, Canada, Australia, Japan and Singapore; they do not

therefore offer a basis for international comparison at a global level.

For evidence of larger scale delocalisation, it is necessary to turn to other literature, such as that on call centres, and other forms of remote work carried out on employer premises.

Market research studies are carried out annually on the call centre sector by companies such as Datamonitor[1] and MZA (MZA, 1999) at a European level and in some countries at a national level. In the UK, Incomes Data Services also carries out an annual survey[2] whilst the extent of call centre employment is discussed in a number of industry forums, such as *Inbound-Outbound* (Anon., 1998), and by academic researchers (Fernie, 1998) and consultants (Roncoroni, 1998). Unfortunately, comparatively little of this research addresses questions of locational choice, although this was examined in an international survey of call centre managers we carried out in 1999 (Huws and Denbigh, 1999). Again, there is no reliable information on call centres at a global level.

The literature on remote data entry and software development is even more fragmentary and anecdotal. Only one study of which we are aware even attempted to measure its extent. This was a 1996 US survey, reported in *The Economist*, which found over 100 of America's top 500 firms buying software services from subcontractors in India (*The Economist*, 1996).

Other commercial sources of data and survey results are available from time to time, many of them usefully summarised by Nua[3] in their newsletter on internet surveys. These tend to focus, however on the markets for particular products and services, rather than internet-based employment. Other sources of data with some relevance include the World Bank (Analysis Consulting, 2000), The NBER (Frankel, 2000), the OECD (OECD Services, 2000), McConnell International (McConnell International, 2000) and Transparency International (Lambsdorff, 1999).

2.2 Hypotheses developed as a result of this review

From our review of this literature and of the available statistics, we developed a number of hypotheses about factors that might influence the international distribution of eWork and which might be identifiable through existing statistical indicators. These were used in several ways: as a basis for an experimental cluster analysis, as a guide to the selection of indicators to be collected and made available to the public in a user-friendly way on the

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1 Datamonitor, *Call Centres in Europe, 2000, Call Centres in the UK, 2000*

2 Incomes Data Services, Pay and conditions in call centres 1998, 1999 and 2000

3 NUA Internet Surveys, http://www.nua.ie/surveys/

EMERGENCE eReadiness database; and, most importantly, as an input to the development of questions for the EMERGENCE employer survey and case studies, described in later chapters of this report. These hypotheses and the associated indicators can be summarised as follows.

2.2.1 Labour costs

It is often asserted that the search for cheaper labour is a, if not the, most important motivator for companies to relocate their employment in any given region. However it is not always easy to separate wage costs from non-wage labour costs, or to separate these from other cost factors. In practice, data on relative salaries by sector are unavailable in some countries. Therefore, initially we aimed to develop an indicator based on salaries as a proportion of output and the size of the labour force. However, we expected to have to use relative GNP per capita as a proxy. The available data on average salaries were examined against the GNP per capita data to check the robustness of this proxy.

2.2.2 Graduate availability

The availability of qualified workers to perform the requisite functions is potentially a crucial factor. It seems likely that employers will look for areas with large numbers of graduates with the right skills and relatively high levels of graduate unemployment. Again, in practice these data are not widely available. The nearest equivalent we could find was the number of third level graduates per number of 20 to 24 year olds as a measure of the output of those with high level skills.

2.2.3 Language

Many types of eWork, especially call centre type functions, require linguistic ability, and tasks that require briefing or regular communication are greatly eased by a common native tongue. We therefore hypothesised that a widely spoken global language might be a positive indicator of a country's ability to attract eWork.

Information on the extent to which global languages are spoken in any given country is not easily come by, unfortunately. Here, we used the use of English, French or Spanish as official languages as a proxy, whilst recognising that other global languages such as Japanese, Arabic, Portuguese and Cantonese Chinese may also be of great importance. It was also recognised that global languages may be widely spoken in some countries where they are not official languages, and conversely that official languages may not always be universally used by the population.

2.2.4 Students studying abroad, emigration and the 'diaspora effect'

A high proportion of students studying abroad seemed likely to correlate positively with a number of factors associated with rendering a location attractive to foreign investors. In particular, this might be a positive attitude to and familiarity with the language and culture of the home-base country of the investing company. In some cases, returning students may have worked in the employing countries on internships or other forms of student placement and have established links with them. In other cases, they might be returning emigrants, or have family or business links to emigrants in these countries. The 'diaspora effect' is often cited as contributing to the success of the export software sector in India. Robust indicators for this variable are not always easily available, but some may be derived from immigration/emigration statistics and from data on the national origins of foreign students in the education-provider countries.

2.2.5 Time zone

Anecdotal evidence suggests that differences (or similarities) between the time zones of recipient and outsourcing countries may be very important in the choice of location. However, there are major practical problems entailed in generating an indicator based on time zones. The problem is that sometimes countries are chosen because they are in the same time zone and on other occasions for the opposite reason – that they are eight or twelve hours away and can thus contribute to the development of a 24-hour service that does not require anti-social shift times in the originating country. This variation in motivation, combined with the wide range of time zones in which the potentially outsourcing countries are based, means that a single indicator cannot be generated.

2.2.6 Telecommunications infrastructure

Telecommunications infrastructure is a crucial prerequisite for ICT-based relocation. Indeed, in an international survey of call centre managers that we carried out in 1999 (Huws and Denbigh, 1999), it emerged as the single most important factor in the choice of call centre location. It was cited as one of the top three reasons for choosing their current location by 41 per cent of the managers in the survey.

The available measures for this are mainlines per capita and percentage growth in the number of mainlines over the last five years. The first captures historic relative telecommunications investment while the later captures recent (often digital) investment.

2.2.7 Quantity of telecommunications traffic

In addition to the capacity of the national telecommunications network, we surmised that it would also be useful to look at the extent to which it is used. ITU data also enabled us to derive indicators for the amount of telecommunications traffic into and out of any given country.

2.2.8 Telecommunications costs

Although liberalisation of telecommunications is well advanced in most countries and telecommunications costs are falling in real terms, it seemed likely that relatively high telecommunications costs might still constitute a significant barrier to incoming eBusinesses. Accordingly, we also selected from the ITU database indicators for various telecommunications costs. It was recognised, however, that the speed of change in this variable might create some difficulties in ensuring that our analysis captured current, rather than historical patterns.

2.2.9 Trust or previous contact

Previous research on the motivations behind international linkages, joint ventures and partnerships, indicates the importance of previous contacts and the development of relationships of trust. The formation of trust relationships is eased by common languages, common histories, previous contact and international exposure. It seemed likely that this would continue to be an important factor in influencing the choice of eWork location.

In this study, we used an experimental indicator based on the International Telecommunications Union's (ITU) direction of traffic database to capture the extent of previous telecommunications-based linkages. The initial indicator was based on the proportion of all OECD country originating international telecommunication minutes a country receives. A range of other similar indicators based on the direction of traffic database were also tested.

This was supplemented by data from Transparency International's International Corruption Index, which rates countries according to their perceived level of corruption.

2.2.10 Internet access and literacy

Another indicator that in practice may be subsumed under the telecommunications infrastructure is the number of Internet hosts per capita in each country. Given the extremely skewed nature of this distribution we also examined the natural logarithm of this indicator and other variants, deriving an indicator for Internet hosts per capita from data collected by Nua.

2.2.11 Economic development and 'openness'

Developments in the digital economy are unlikely to take place in isolation from other economic activities. It was hypothesised that indicators of the level of development and openness to the global economy, such as the level of inward direct investment, might also prove to be important. These were also collected and integrated into our eReadiness database.

2.2.12 Demographic factors

A number of demographic factors have the potential to influence decisions about inward investment. These include the age of the population (with a young workforce being favoured for some types of work), the population density, the degree of urbanisation, labour market participation and the dependency ratio. Again, data on all these indicators were assembled and integrated into the database.

3. The EMERGENCE Definition of eWork

3.1 What is eWork?

During the quarter-century or so since it was discovered that the combination of computing and telecommunications technologies could facilitate a relocation of white-collar employment away from its traditional office locations, an enormous range of terminology has been developed to describe some or all of the forms of delocalisation which have been made possible. These include 'telecommuting', 'flexi-place', 'eWork', 'remote work', 'networking', 'digital nomadic work', 'electronic homeworking' and many variants of these. The term currently favoured by the European Commission and some other agencies is 'eWork'. Although this term does not specifically refer to distance (as do, for instance, the terms which are prefixed by 'tele-' or 'remote') it has the benefit of avoiding over-specificity and of being capable of being applied across a range of activities and not being restricted to a particular form of remote work, such as homeworking or mobile working.

We have adopted the term 'eWork' in the EMERGENCE project to refer generically to any type of work which involves the digital processing of information and which uses a telecommunications link for receipt or delivery of the work to a remote employer or business client.

It should be noted that the focus here is on the remote link with the employing body or business client. Such a definition does not include work which involves dealing with the general public by telephone or email (such as call centre work) unless this work also happens to involve the transmission of work over a telecommunications link to a remote employer or business client (*eg* an outsourced call centre, or a call centre located on a remote site but accessing a database at the employer's head office).

3.2 A typology of delocalisation

Because of the very widespread use of information and communications technologies across industries and occupations, such a definition covers an enormous range of employment, and

there are very many different ways in which the broad category 'eWork' can be broken down. One could, for instance, subdivide it by occupation, by skill or qualification, by the type of remote workplace involved, by industrial sector, by the type of employment contract used, by the number of hours worked, by the demographic characteristics of the workers (*eg* their age, sex, ethnicity, marital status, disability *etc.*), by the degree of remoteness, flexibility or autonomy involved in the working arrangement, or by any one of a range of other variables.

The EMERGENCE conceptual framework was determined partly by the need to collect empirical data in a precise and unambiguous form which would allow for international comparability, and partly by the perceived information needs of policy-makers.

In essence, it involves the development of two complementary typologies which can be cross-tabulated against each other: a typology of forms of work delocalisation and a typology of delocalisable activities.

The conceptual framework developed for classifying the various different forms of delocalised work involves drawing two broad distinctions.

The first of these is a legal distinction: between work carried out internally (*ie* by people contracted to work directly for an organisation) and normally covered by a contract of employment, and work that is outsourced, and therefore normally carried out under a contract for the supply of services.

The second is a distinction between work carried out collectively by groups of workers on shared premises (normally a building which could be described as an 'office') and that which is carried out by individuals acting in isolation away from 'office' premises. These people might be working from their homes (wholly or partially), or working nomadically from a variety of different locations, for all or part of the working week.

Figure 3.1: Typology of Work delocalisation

		Contractual	
		Internal/employees	**Outsourced**
Type of workplace	**Individualised (away from 'office' premises)**	Employed tele-homeworkers Mobile employees	Freelance eWorkers or mobile workers
	Collective (on shared 'office' premises)	Remote back offices/call centres Employees working in telecottages or other third party premises	Specialist business service supply companies Outsourced call centres

Source: IES

These variables are summarised in Figure 3.1. When combined, they provide us with a two-by-two cell matrix within which all forms of eWork so far identified by researchers can be grouped. These categories are necessarily somewhat rough and ready. There are both major differences within each category and overlaps between them.

It is useful, perhaps, to think of them not so much as discrete and stable categories of employment but as choices available to employers in how, and whence, they should obtain the various business services which they require. Should they buy in the service from an external supplier, or develop their own internal source of supply using their own employees? If the latter, should they insist that these employees work at the establishment where the customer department is based? Or should they allow them to work elsewhere? Or would it be a better idea to set up a specialist back office at another location?

In the EMERGENCE employer survey, information was collected on each of these forms of working, *provided*:

- that it was remote: *ie* it took place at a geographical distance from the establishment which was surveyed; and
- that it was telemediated: *ie* that a telecommunications link was used to deliver the work.

Because of the considerable policy interest in the subject of call centres, in the survey an additional distinction was made between remote locations that were described as call centres and those that were not.

Combining these variables gave us in all nine different categories of eWork:

1. Fully home-based working by employees
2. Multilocational or nomadic working by employees
3. Freelance work carried out away from the premises
4. Remote work carried out in remote 'in-house' (internally owned) back offices which are not call centres
5. Work by employees carried out in remote 'in-house' (internally owned) call centres
6. Work carried out by employees in telecottages or other remote third-party premises which are not call centres
7. Work carried out by employees in telecottages or other remote third-party premises which are call centres
8. Work outsourced to business service suppliers which are not call centres
9. Work outsourced to call centres.

Whilst all these forms are separately identified in the EMERGENCE survey results, and form mutually exclusive categories at any given point in time, it is recognised that it is entirely possible that an employer may use more than one of these forms of eWork to carry out any given business function, or may switch from one to another over time. By the same token, an individual worker may also move over the course of a working lifetime between different forms of eWork.

3.3 A typology of delocalisable activities

Having identified the different ways in which work may be delocalised, we then categorised the kinds of activities involved in this delocalisation.

It was decided that for the purposes of the exploratory EMERGENCE employer survey the most stable and comparable, and therefore the most useful, unit of analysis was the generic business function.

The *occupation* was rejected as a defining category partly because of major international and sectoral differences in qualifications and occupational structure and in the internal division of labour within organisations, and partly because there are no categories in most of the official occupational classification systems for many of the 'new' occupations such as 'webmaster' or 'call centre worker'.

There were also major difficulties, which will be expanded on in Chapter 6 of this report, in the use of sector codes as classification categories. We wished to record the sector of our respondent organisations as a separate variable in order to investigate the relationship between sector code and eWork. This precluded using it as a primary organising variable.

The generic business functions identified as relevant and used for data collection and analysis were:

1. Sales (telemarketing and mobile sales)
2. Customer service, including providing information, counselling and advice to the public or to business customers
3. Data processing, typing and other forms of data input
4. Creative or content-generating work including research and development, design, editorial work and multimedia production
5. Software development, maintenance and support
6. Accounting, debt collection and other financial services
7. General management, human resources management, and training.

Once again, some of these categories may appear overly inclusive, and there is indeed some degree of overlap between them. These functional types did, however, appear to correspond reasonably well with the departmental structures of the establishments surveyed by EMERGENCE and to make sense to the interviewees in the survey. They must therefore be regarded, if not as ideal, at least as the least problematic unit of analysis available to researchers at the time.

When combined with the nine possible forms of eWork, these seven categories give us (at least in theory) sixty-three different possible forms of eWork which may be used by any given organisation.

3.4 A conceptual 'map' of the eOrganisation

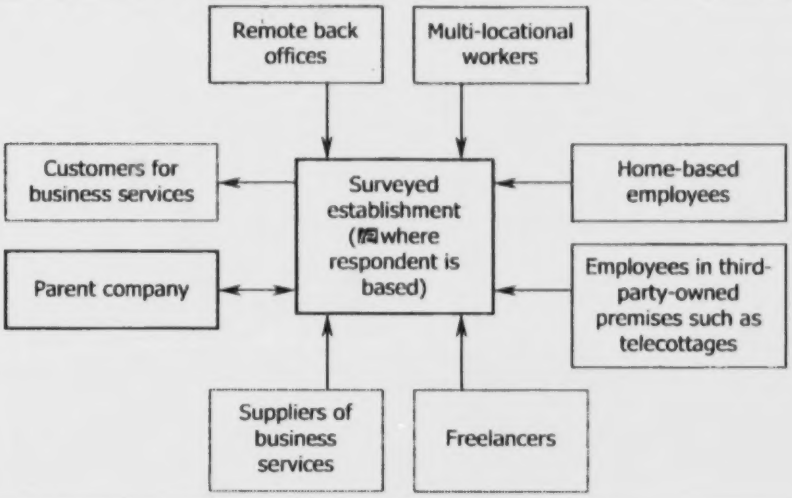
We have already noted that the basic unit of study in the EMERGENCE survey is the 'establishment'. However, there are a number of different ways in which this geographical concept may be related to the legal concept of the 'firm' or the 'organisation'. In order to avoid ambiguity or circular logic in the development of analytical categories, it was necessary to develop a conceptual map to make it possible to plot systematically the different ways in which companies and employees could be linked remotely.

Figure 3.2 below does not cover every conceivable type of distant telemediated relationship which it is possible for an establishment to engage in. However, it does demonstrate diagrammatically all those variables which are captured and mapped in the EMERGENCE survey. As well as the inputs of telemediated work categorised above, this also demonstrates the outputs which may be present where the surveyed company is a supplier of telemediated business services. In addition, it acknowledges that the establishment surveyed may be a branch or subsidiary of an organisation which is headquartered elsewhere and to which it supplies information-based business services (or alternatively from which it receives such business services).

By capturing information separately about the location of each of these units, it makes it possible not only to identify where in the world each type of eWork is located, but also to obtain some information about the position in the value chain of any given unit.

In the diagram, the remote partners with more fixed and permanent 'internal' relationships (normally an employment relationship) to the respondent establishment are shown in solid boxes; those with external suppliers and customers, which may be regarded as more shifting and contingent, have broken outlines.

Figure 3.2: A conceptual map of the eOrganisation



Source: IES

In the EMERGENCE establishment survey, the location of each of these units was recorded in each case. However, in order to keep the interview to a manageable length, detailed questions about the reason for choosing any particular location or subcontractor were asked only where the unit was located remotely ('remoteness' being defined as outside the NUTS1-level region where the respondent was based). Similarly, where customers were based outside the region where the surveyed establishment was based, respondents were asked why they thought their organisation was chosen to supply this service.

This helped to build up a picture not only of the global map of eWork but also of the locational advantages of any given region.

3.5 Uses of this model in the EMERGENCE project

This model of eWork was used as an organising framework for all the research activities of the project.

In the establishment survey, it was used to structure the questionnaire for the telephone interviews, which were designed to capture each of these variables separately.

The research modules drawing directly on this analysis (for instance those looking at the implications for SMEs, for Southern Europe and for Central and Eastern Europe) also looked separately at all these dimensions, although sometimes they were aggregated for the purposes of analysis.

However some of the other research modules focused specifically on 'individualised' or 'collective' forms of eWork.

Because no reliable data sets exist giving a longitudinal picture of 'collective' eWork (which cannot be distinguished from other forms of office-based work in current survey results) the modelling and forecasting of eWork focused only on individual forms, whether by employees or the self-employed.

However it was 'collective' forms of eWork which formed the focus of the EMERGENCE case studies and which were designed to capture the dynamics of significant relocations of work across major distances. In selecting the case studies, care was taken to ensure a balance between in-house and outsourced remote working arrangements.

3.6 Definition of the 'knowledge sector'

In some of the additional surveys of very small establishments (<50 employees) carried out to supplement the main EMERGENCE employer survey in Europe, it was necessary, for cost reasons, to focus only on those sectors of the economy which were likely to be supplying eServices to other organisations.

For the purposes of these surveys it was necessary to develop an *ad hoc* definition of the knowledge sector. This was defined as follows (using current NACE codes):

Table 3.1: The composition of the 'knowledge sector'

Publishing, printing and reproduction of recorded media	22	Accounting, book-keeping and auditing activities, tax consultancy	74.12
Other supporting transport activities	63.2	Market research and public opinion polling	74.13
Activities of travel agents and tour operators; tourist assistance activities n.e.c.	63.3	Business and Management consultancy activities	74.14
Insurance and pensions funding except compulsory social security	66	Architectural and engineering activities	74.2
		Advertising	74.4
Activities auxiliary to financial intermediation	67	Labour recruitment and provision of personnel	74.5
Real Estate activities on a fee or contract basis	70.3		
		Photographic activities	74.81
Hardware consultancy	72.1	Secretarial and translation activities	74.83
Software consultancy and supply	72.2	Other business activities n.e.c.	74.84
Data processing	72.3	Adult and other education n.e.c.	80.42
Database activities	72.4	Motion picture and video production	92.1
Other computer-related activities	72.6	Radio and television activities	92.2
Research and development	73	Other artistic and literary creation and interpretation	92.3

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4. The EMERGENCE European Employer Survey

4.1 Introduction

In order to establish some base-line data on the prevalence of eWork in Europe, EMERGENCE carried out an ambitious survey of establishments right across the 15 EU member states, plus Hungary, Poland and the Czech Republic.

The results of this survey were later augmented by those from supplementary surveys of small establishments in Denmark, Ireland and Belgium and a national survey of establishments of all sizes in Australia. This chapter summarises the results from the original 18-country European survey.

4.2 sample and research methodology

Using computer-aided telephone interviews, a team of mother-tongue researchers based at NOP's international call centre in London completed 7,268 interviews with informants in establishments with 50 or more employees in all relevant European languages. The sample was stratified by country, size and sector.

The breakdown of the sample by country was arrived at as a result of balancing two considerations: on the one hand, it was necessary to take account of the major differences in size between Europe's national economies; on the other, it was felt important to have a sample in each country sufficiently large to make it possible to carry out some analysis at a national level and to draw valid comparisons between countries. The final breakdown is shown in Table 4.1. This represents a relative undersampling in

Table 4.1: Breakdown of sample by country

Austria	300	Germany	800	Netherlands	400
Belgium	300	Greece	300	Poland	350
Czech Republic	350	Hungary	350	Portugal	300
Denmark	300	Ireland	300	Spain	700
Finland	400	Italy	800	Sweden	400
France	800	Luxembourg	100	UK	800

Source: IES

Table 4.2: Breakdown of sample by sector (%)

Primary sector/manufacturing/construction	30
Business and financial services	25
Other services	35
Public administration	10

Source: IES

large countries like Germany, France and the UK and a relative oversampling in smaller countries like Luxembourg, Denmark and Ireland.

Within each country, the sample was broken down as shown in Table 4..2. In most countries this represented an over-sampling of the business and financial services sector, where we expected to find a large amount of eWork activity, and an under-representation in some other sectors. The stratification by size consisted of ensuring that 50 per cent of interviews took place in establishments with over 200 employees, and 50 per cent with those employing between 50 and 199.

Subsequently the same questionnaire and methodology were used to carry out a survey of 1,027 establishments of all sizes in Australia. Supplementary surveys of 100 small establishments with fewer than 50 employees were also carried out in sectors defined as the 'knowledge sector' both in Ireland and in Denmark (see Table 3.1 for a definition of this sector). Another supplementary survey of 300 establishments in this size category was carried out across all sectors in Belgium[1].

4.3 main results from the survey

4.3.1 The overall picture

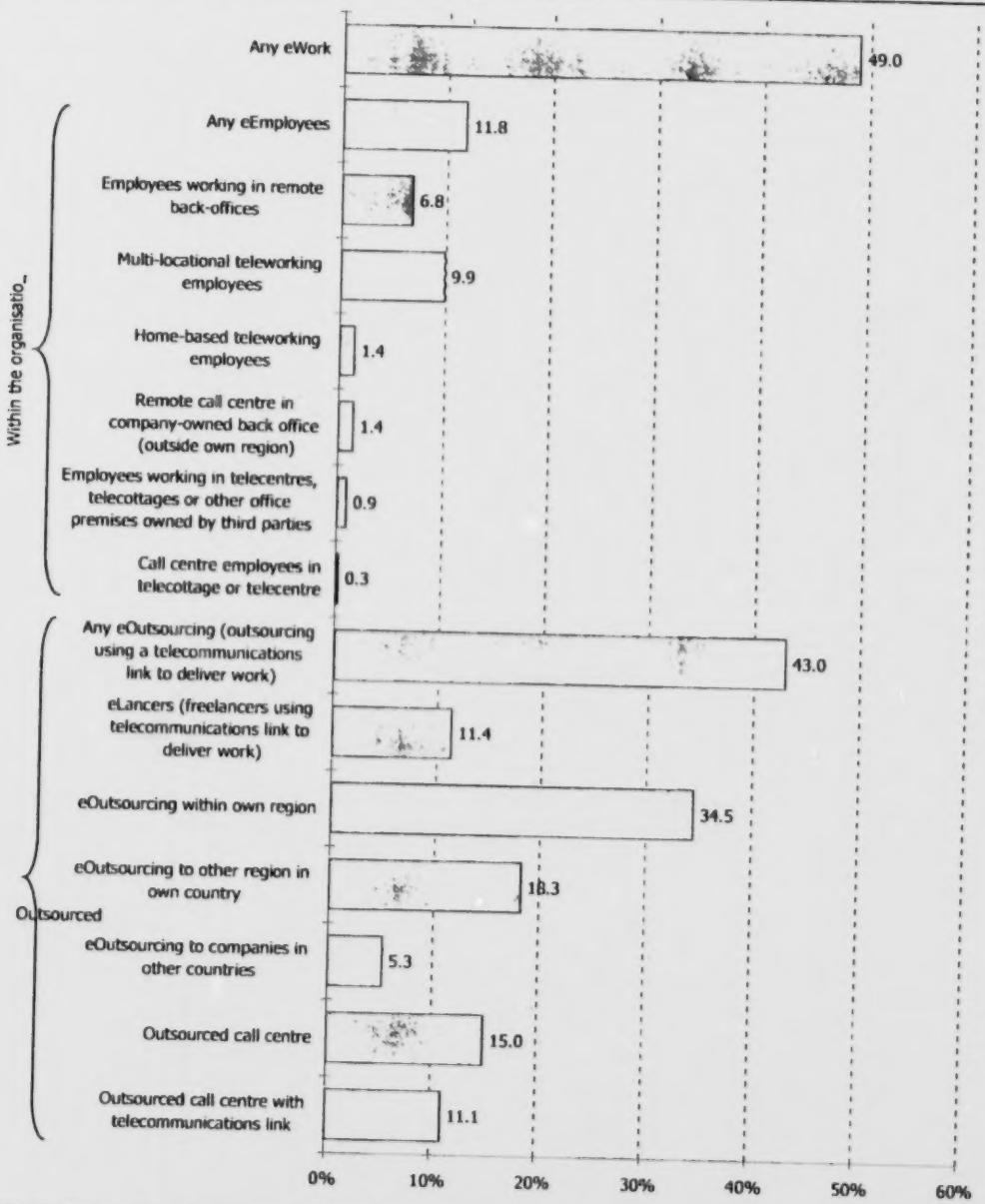
The broadest definition of eWork encompasses any work which is carried out away from an establishment and managed from that establishment using information technology and a telecommunications link for receipt or delivery of the work.

According to this definition, nearly half of all establishments in Europe (49 per cent) are already practising some form of eWork, as can be seen from Figure 4.1.

As the figure shows, the largest proportion of this eWork involves outsourcing, although nearly 12 per cent of all establishments use forms of eWorking involving direct employees.

[1] further information about these supplementary surveys can be found on www.emergence.nu

Figure 4.1: eWork in Europe by type of eWork



Source: EMERGENCE European Employer Survey, 2000 (IES/NOP). Weighted figures; establishments with >50 employees in EU (15) plus Hungary, Poland and Czech Republic. Weighted base: 7,305 cases

Here, it is interesting to note that the stereotypical employee eWorker based solely at home is in fact one of the least popular forms of eWork. Only one and a half per cent of establishments in Europe (EU 15 + 3) employ people to work exclusively from home in this way, although the proportion rises to over two per cent in the EU (15). It is much more common to use the new technologies

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to support multilocational eWorking by employees, a form of working much less likely to be associated with social isolation, which is practised by approximately one European employer in ten.

Turning to eWork carried out by employees on office premises, we find that employers are already making significant use of information and communications technologies to carry work out remotely. One European employer in fourteen (6.8 per cent) has a back office in another region. Bearing in mind that the 'regions' we are talking about here are large – NUTS1 level – regions, which, in the case of smaller countries like Ireland, Portugal or Luxembourg, constitute the whole country, this represents a significant displacement of work.

Less than one per cent of establishments make use of telecottages, telecentres or other remote office premises owned by third parties as workplaces for their remote employees.

These forms of in-house eWorking are heavily outweighed by the use of eOutsourcing as a mechanism for carrying work out remotely. Over half of all establishments (56 per cent) outsource at least one business service involving information processing. Restricting our definition only to those which use electronic means of delivery ('eOutsourcers') we find 43 per cent of employers making use of this practice. Much of this eOutsourcing is carried out within the region where the employer is based (34.5 per cent) but substantial numbers (18.3 per cent) outsource to other regions within the same country, whilst 5.3 per cent outsource outside their national borders.

Outsourced forms of eWorking may involve contracts with individual freelancers or with companies.

Nearly one employer in six (17.3 per cent) uses freelancers to deliver some form of information service. However, not all of these use information and communications technologies for the receipt or delivery of work. When the definition is tightened to include only telemediated freelance work (*ie* work involving delivery over a telecommunications link), we find that 11.4 per cent of European employers are using 'eLancers', a proportion which is roughly equivalent to those using home-based or multilocational eWorking employees. This is roughly in line with expectations. Data from the UK Labour Force Survey (ONS, 1997-2000, analysis by IES) indicate that the numbers of self-employed and employed home-based eWorkers are approximately the same (with employed eWorkers making up around 51 per cent of the total and the self-employed 49 per cent, although this may vary by one percentage point from one year to the next). Whilst no simple relationship can be established between the proportions of employers employing eWorkers and the proportions of the workforce who work in this way, it is reasonable to expect some correspondence.

Call centres make up a significant proportion of eWork. Whilst only 1.4 per cent of respondents had an in-house remote call centre (outside their own region with a direct telecommunications link) no fewer than 15 per cent use an outsourced call centre. For 11.1 per cent of establishments this involves a direct telecommunications link with the main office.

4.3.2 Functions involved in eWork

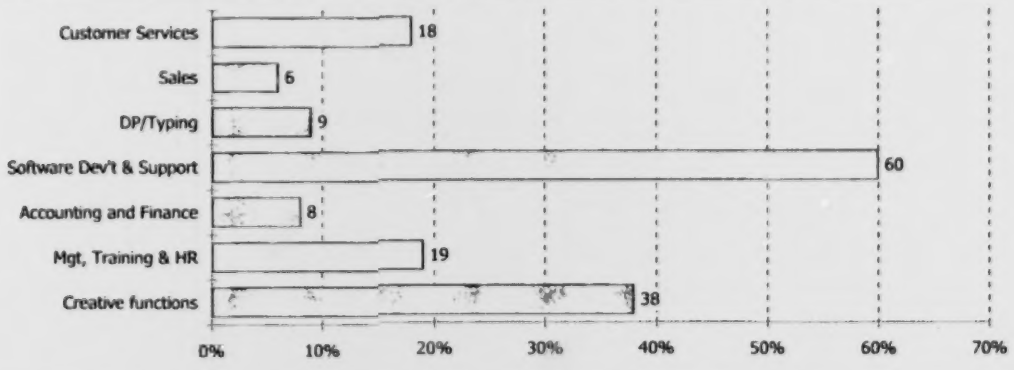
Turning to the functions involved in eWork, shown in Figure 4.2, we find that six out of ten of the establishments using eWork use it for software development and support, which is the function most likely to be carried out remotely using a telecommunications link. There are several possible explanations for this.

First, it is a function that by its very nature lends itself to eWork. The personnel involved in this work are likely both to possess the requisite skills and to have access to the technology to enable them to work in this way.

Second, they are also likely to be in a position to use the Internet or other electronic means to recruit specialists or market their services remotely. There is, in other words, an established telemarketplace for such work, although it is by no means universal in its scope.

Third, this is a rapidly changing field that, at the time of our survey, in 2000, was subject to highly-publicised skill shortages, leading employers actively to seek expertise wherever they could find it, and encouraging software professionals to offer their services remotely. This situation also gave a certain leverage to some software professionals on the labour market, enabling them to demand the working conditions that suited them best; it is quite possible that the right to eWork might constitute one of these benefits.

Figure 4.2: eWork by function



Source: EMERGENCE European Employer Survey, 2000 (IES/NOP). Weighted figures; establishments with >50 employees in EU (15) plus Hungary, Poland and Czech Republic. Weighted base 4,657

The second most common telemediated function, at 38 per cent, is 'creative work', a category which includes design, editorial work, multimedia content generation and other creative activities. It also includes research and development.

This is followed by management, training and human resource management (HR) functions, at 19 per cent and customer services at 18 per cent. These results reflect strong recent trends towards the centralisation, and in some cases outsourcing, of HR functions (Reilly, 2000) and the rapid growth of call centres, especially outsourced call centres, both for HR and for customer services functions (Huws and Denbigh, 1999).

Since sales activities have traditionally been carried out in a dispersed way, we did not wish to run the risk of categorising all travelling sales personnel as eWorkers, so the sales function was defined rather narrowly in the EMERGENCE survey to include only sales activities carried out using a telecommunications link. Such telesales activities were reported by only six per cent of all eWork employers. However, this apparently low level is partly accounted for by the increasingly popular pattern of integrating sales and customer service functions – many telesales activities have been subsumed into customer services departments.

At nine and eight per cent respectively, data processing activities and finance and accounting services also play a significant role in eWork.

4.4 eEmployment: characteristics of the employed eWorkforce

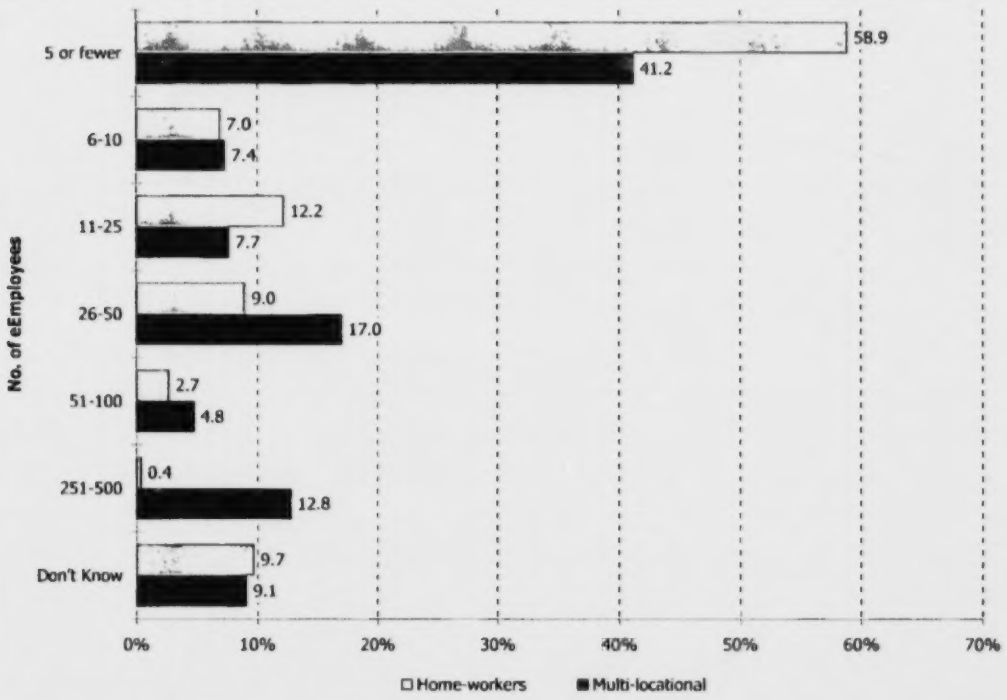
4.4.1 Home-based and multilocational eEmployment

Relatively small numbers of employees are usually involved in any given establishment in home-based or multilocational eWorking arrangements, as can be seen from Figure 4.3.

In nearly six out of ten (58.9 per cent) of cases where fully home-based eWorkers were employed, and over four out of ten (41.2 per cent) of cases concerning multilocational eEmployees, fewer than six employees were involved. However this is by no means a universal pattern. Nearly one case in five of multilocational eEmployment (18.6 per cent) involved over 50 workers, and approximately a third (32.1 per cent) between 10 and 50 employees. For homeworking eEmployment, the comparable figures were 3.1 per cent and 28.2 per cent respectively. This suggests that substantial numbers of employees may be working in this way in some sectors and regions.

Contrary to the expectations of many commentators, who see these flexible forms of working as particularly well suited to women because of their greater share of domestic responsibility,

Figure 4.3: Home-based eEmployment: number of eEmployees working fully from home (% of responses)



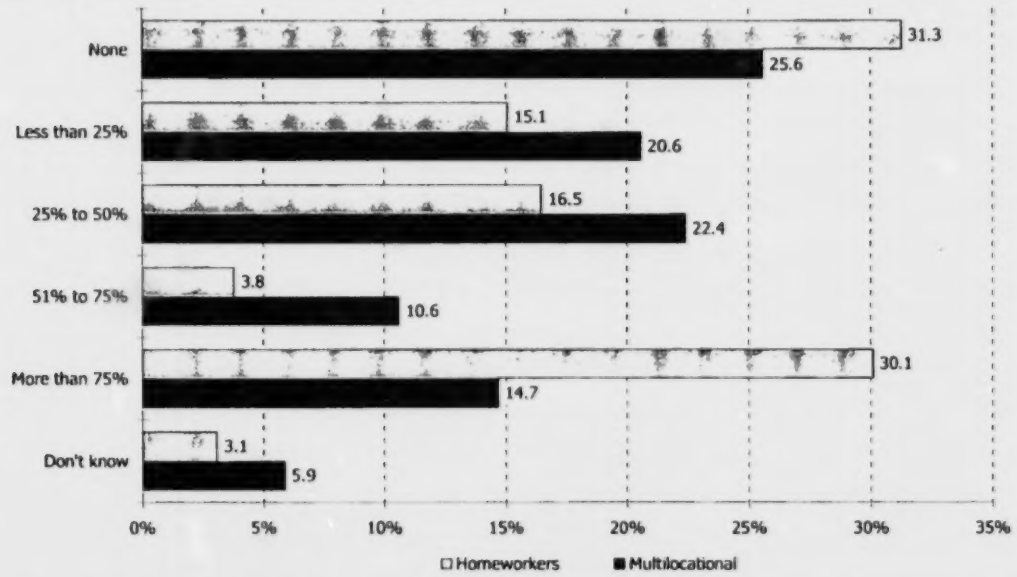
Source: EMERGENCE European Employer Survey, 2000 (IES/NOP). Weighted figures; establishments in EU (15) plus Hungary, Poland and Czech Republic with >50 employees employing fully home-based employees for eWork. Weighted base: 154 instances of homeworking and 894 instances of multilocational working.

most arrangements are in fact dominated by male employees. In over a quarter (25.6 per cent) of cases of multilocational eEmployment and over three out of ten (31.3 per cent) cases of home-based eEmployment, no women were involved at all, as shown in Figure 4.4. Including the cases where women made up less than a quarter of the eWorkforce brings the proportions of male-dominated cases to a more or less equal 46.4 per cent for homeworkers and 47.2 per cent of multilocational workers.

However, in the case of home-based working, in 30.1 per cent of cases women formed the overwhelming majority (over 75 per cent) of eWorkers, with a further 3.8 per cent of cases where they form between 50 per cent and 75 per cent. This suggests that there may be some polarisation between female-dominated and male-dominated types of home-based eWork, perhaps rooted in occupational differences.

In multilocational working, the proportion of female-dominated groups is somewhat smaller. In only a quarter (25.3 per cent) of cases do women form more than half the workforce.

Figure 4.4: Gender of homeworking and multilocational eEmployees: proportion who are women (% of responses)



Source: EMERGENCE European Employer Survey, 2000 (IES/NOP). Weighted figures: establishments with >50 employees in EU (15) plus Hungary, Poland and Czech Republic. Weighted base: 154 instances of homeworking and 894 instances of multilocational working.

The differences in gender patterns to be found in eEmployment reflect differences in the types of activity involved in both home-based and multilocational working.

Turning to the functions involved in these forms of eEmployment (shown in Figure 4.5) we can see that the least popular function in each case, at 4.8 per cent, is the accounting and financial function, followed by data processing or typing, which accounts for 6.1 per cent of entirely home-based eEmployment and 7.4 per cent of multilocational eEmployment. Telesales activities account for 9.7 per cent and 7.4 per cent respectively; creative functions for 11 per cent and 9.1 per cent respectively and Management and HR functions for 15.7 per cent and 12.8 per cent respectively.

Two activities – which are also the most popular – stand out as having distinctive locational profiles. The first of these is customer services, which is involved in over four out of ten (41.2 per cent) of all cases of multilocational eEmployment, compared with a quarter (24.6 per cent) of home-based eEmployment. The second is software development and support which is more likely to be a home-based activity, accounting for 28.2 per cent of all cases of home-based eEmployment, compared with 17 per cent of multilocational eEmployment.

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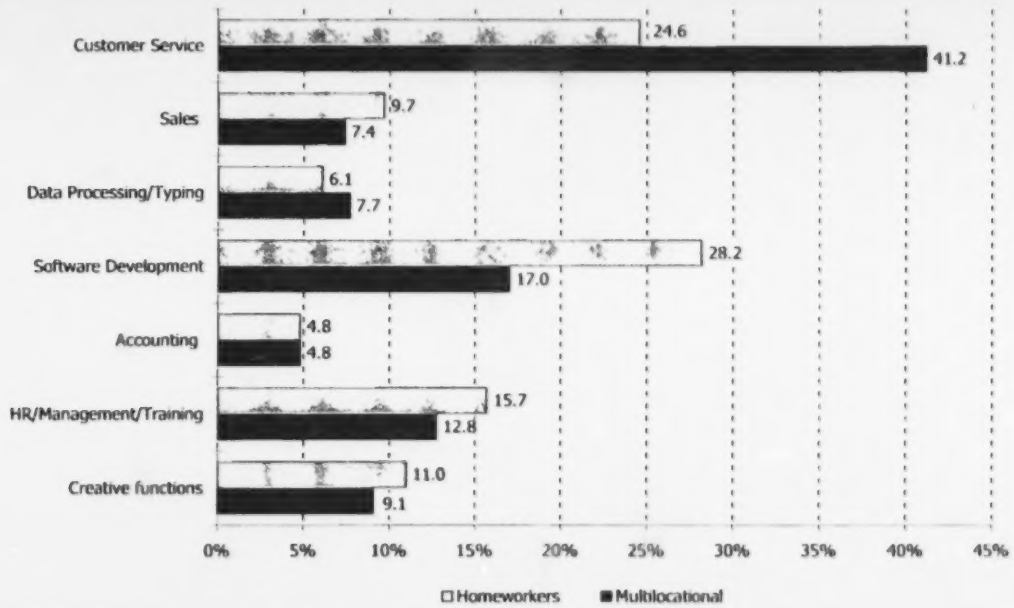
Figure 4.5: Functions involved in home-based and multilocational eEmployment (% of responses)



Source: EMERGENCE European Employer Survey, 2000 (IES/NOP). Weighted figures; establishments with >50 employees in EU (15) plus Hungary, Poland and Czech Republic. Weighted base: 154 instances of homeworking and 894 instances of multilocational working.

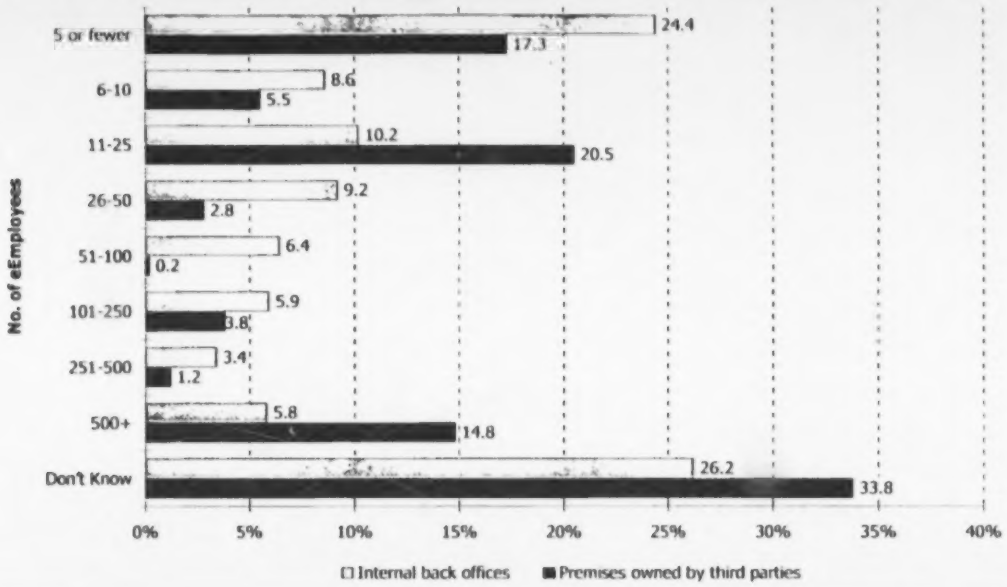
eEmployment in remote office premises

Despite the fact that 'remoteness' was defined somewhat narrowly, to include only activities located outside the (NUTS1 level) region in which the respondent was based, it is clear that remote back offices are used on a significant scale – by 6.8 per cent of establishments – whilst a few employers also employ people who work remotely from office-type premises owned by third parties, such as telecentres and telecottages.

As can be seen from Figure 4.6, The majority of the remote establishments were small, with over half (52.4 per cent) of internally owned sites employing fewer than 50 people to deliver the specified business service. There are, however, significant exceptions. Nearly six per cent (5.8 per cent) of internally owned back offices involve more than 500 remote employees whilst a further 15.7 involve between 51 and 500 employees. In remote premises owned by third parties only 5.2 per cent of cases involve 51-500 workers, whilst 14.8 per cent involve over 500 employees.

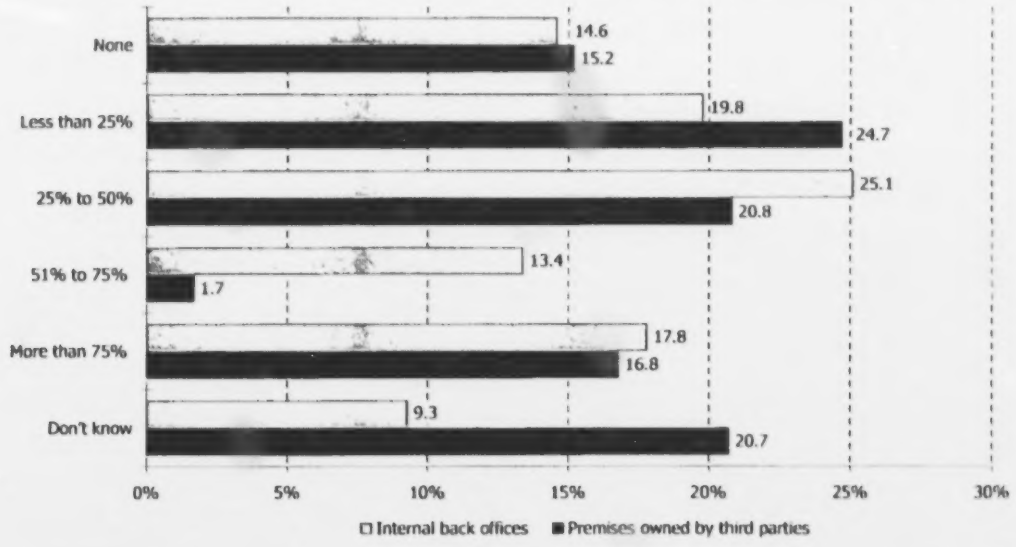
The gender breakdown of eEmployees on remote sites (shown in Figure 4.7) shows a more balanced picture than that for the more individualised forms of eWorking involving home-based or nomadic work, although here too there appears to be some overall dominance of men. The proportions of strongly female dominated

Figure 4.6: Numbers of eEmployees on remote office sites (% of sites)



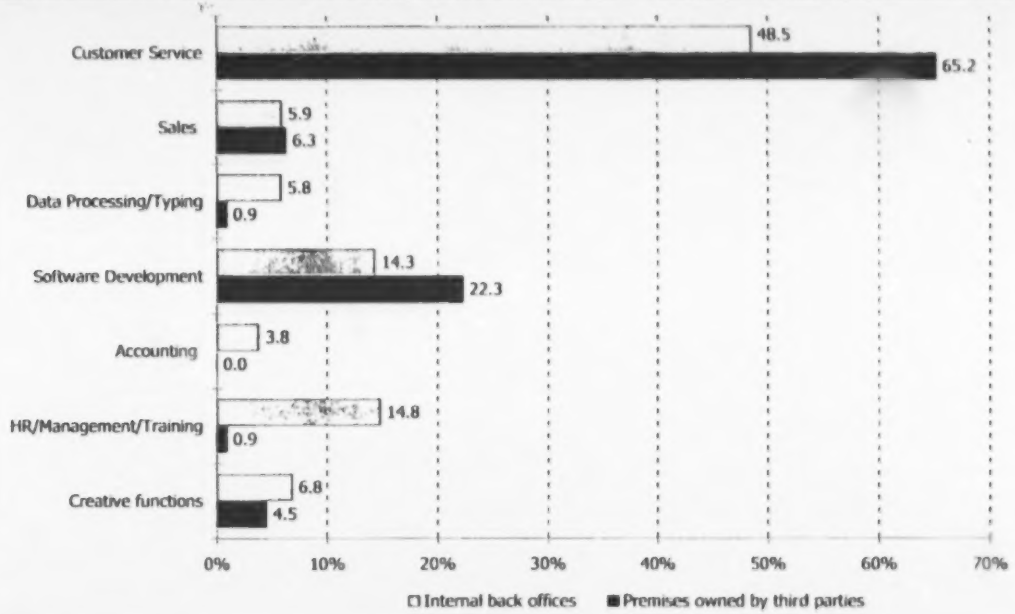
Source: EMERGENCE European Employer Survey, 2000 (IES/NOP). Weighted figures; establishments with >50 employees in EU (15) plus Hungary, Poland and Czech Republic. Weighted base: 1,060 remote company-owned sites and 110 remote sites owned by third parties.

Figure 4.7: Remote office sites, gender of eEmployees: proportion who are women (% of sites)



Source: EMERGENCE European Employer Survey, 2000 (IES/NOP). Weighted figures; establishments with >50 employees in EU (15) plus Hungary, Poland and Czech Republic. Weighted base: 782 remote company-owned sites and 73 remote sites owned by third parties in which gender of workers was known.

Figure 4.8: Functions involved in eEmployment in remote offices (% of sites)



Source: EMERGENCE European Employer Survey, 2000 (IES/NOP). Weighted figures; establishments with >50 employees in EU (15) plus Hungary, Poland and Czech Republic. Weighted base: 1,060 remote company-owned sites and 110 remote sites owned by third parties.

workplaces (those where over 75 per cent of the staff are women) are roughly the same, at 17.8 per cent and 16.8 per cent respectively, for both internally and externally owned premises. So too are the proportions where there are no women at all, at 14.6 per cent and 15.2 per cent respectively. In the intermediate ranges there are some differences, with internally owned back offices somewhat more likely to have higher proportions of women.

As shown in Figure 4.8, the most common activity in remote offices is customer service – a typical call centre function. This accounts for nearly half (48.5 per cent) of eEmployment in internally owned remote offices and nearly two thirds (65.2 per cent) of eEmployment in those owned by third parties. This is followed in almost equal proportions in the internal remote offices by management, training and HR functions and by software development and support (at 14.8 per cent and 14.3 per cent respectively). In third-party owned premises, software development is more important, at 22.3 per cent.

4.5 eOutsourcing: the demand side

As already noted, the use of ICTs to support outsourcing of business services is widespread; around four cases in five involve delivery by telecommunications.

As with remote back offices, the number of workers involved in supplying outsourced eServices is most frequently small. Where numbers were known, the largest proportion, 22.9 per cent, involved five workers or fewer. In a further 19.6 per cent of cases fewer than 50 workers were involved. The proportions employed in larger numbers are small by comparison.

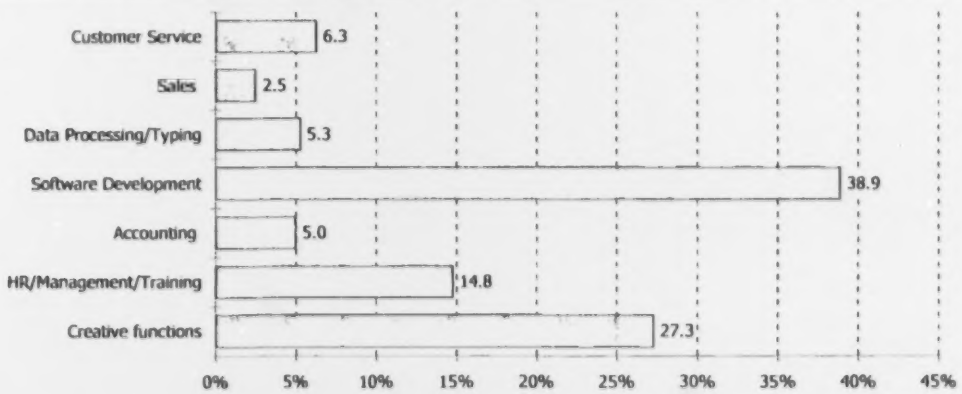
In cases where the gender of workers was known, the picture was dominated by men. In no fewer than 20.4 per cent of cases, no women were employed whatsoever. In a further 29.9 per cent of cases women were in a minority, leaving only 18.2 per cent of cases where women formed over half the workforce.

4.5.1 Activities involved in eOutsourcing

As can be seen from Figure 4.9, the most important activity involved in eOutsourcing is software development and support, which accounts for 38.9 per cent of all cases. This is followed by creative functions, at 27.3 per cent and then by HR, management and training functions. In contrast with internally owned remote offices, customer service accounts for a relatively low proportion of eOutsourcing, at 6.3 per cent, with data processing, financial functions and sales functions at 5.3 per cent, 5.0 per cent and 2.5 per cent respectively.

It seems likely that the two most popular functions – software development and creative functions – are those for which demand may be intermittent. For many organisations some of the other functions, such as customer service, financial services or sales, may fall into a category of core activities which are more likely to be required fairly continuously and are therefore more likely to be carried out by employees.

Figure 4.9: Functions involved in eOutsourcing



Source: EMERGENCE European Employer Survey, 2000 (IES/NOP). Weighted figures; establishments with >50 employees in EU (15) plus Hungary, Poland and Czech Republic. Weighted base 5,567 cases involving outsourcing with an electronic link to the surveyed establishment.

4.6 eWork: the supply side

An eOutsourcing relationship, of course involves two parties. Our survey looked not only at the demand for outsourced telemediated work but also the supply side, at least insofar as this involves establishments with more than fifty employees.

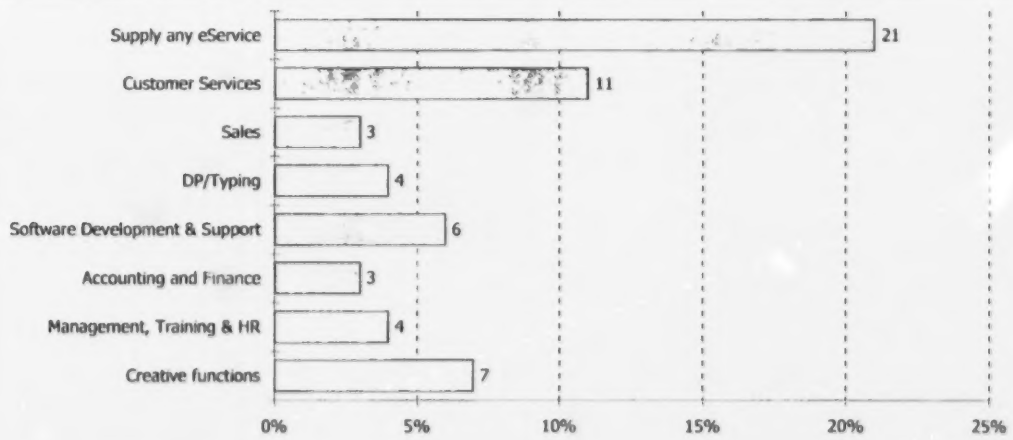
As can be seen from Figure 4.10, over one in five (21 per cent) of all larger establishments in Europe is already engaged in supplying telemediated services. This suggests that such activities already play a significant role in the European economy.

The function most likely to be involved (at 14 per cent) is customer services, perhaps a reflection of the rapid recent growth of outsourced call centres and the relatively high proportion of these involved in this activity.

This is followed by design, editorial and creative functions, at nine per cent and software development and support at seven per cent. Given the very high level of demand for IT services, and the very high proportion of call centres which involve the provision of technical support, the relatively low prevalence is at first sight a little surprising. However it can be explained by two factors.

The first of these is that (as we saw from the supply side picture) much of the outsourcing of IT services is to very small organisations. Establishments with fewer than 50 employees were excluded from the main EMERGENCE European survey and were therefore not picked up by it. Some, but not all, of the results of the supplementary surveys of small firms carried out in Australia, Belgium, Denmark and Ireland were available at the time of writing and suggest that eWork supply in this sector is indeed

Figure 4.10: The supply of outsourced eServices in Europe



Source: EMERGENCE European Employer Survey, 2000 (IES/NOP). Weighted figures; establishments with >50 employees in EU (15) plus Hungary, Poland and Czech Republic. Weighted base: 7,305 cases.

more prevalent in micro-establishments; these results are discussed in Chapter 8 of this report.

The second factor is that IT services is one of the functions most likely to be supplied from outside the EU (for instance from India, the Philippines, the United States or Russia). The geographical separation of demand from supply thus means that the former may be higher than the latter in Europe. It should be noted, however, that although the EMERGENCE survey found a number of cases involving eOutsourcing from outside Europe, these cases were nevertheless outnumbered by those where a location in another European region was involved.

4.6.1 Sectors involved in the supply of eServices

A major problem in the investigation of eWork, or, indeed, in the analysis of any other aspect of the information economy, is identifying the sectors involved in the new information economy.

One of the tasks which the EMERGENCE project therefore set itself was to chart the correspondence between NACE sectoral classification codes and the supply of eServices.

The results of this exercise are surprising and illustrate the extent to which knowledge-based activities now permeate virtually every sector of the economy. The survey found an extremely large number of different sectors involved in the supply of business services. At the four digit NACE level, there were 150 different sectors involved in the supply of customer services, 77 in the supply of telesales, 89 in the supply of data processing services, 109 in software supply, 102 supplying financial services, 94 selling management, training and HR functions, and 127 in supplying creative services.

This situation results from a number of factors including the breakdown of large organisations into separate cost- or profit-centres which (whilst retaining the sectoral classification of their parent) trade separately in business services, the impact of convergence between sectors, mergers, demergers, strategic alliances, outsourcing and 'insourcing'. Other reports from the EMERGENCE project (see page ii) discuss the most common sectors involved in each activity and draw out some of the implications.

We can conclude that, although these results provide an insight into the complexity of the supply of information services and the extent to which ICTs are already being used to support their inflows and outflows both within and between organisations, they also demonstrate the inadequacy of the existing classification schemes to capture information about these flows which would enable them to be monitored effectively in the future. They also raise more general questions about the ability of existing statistical

frameworks to supply the raw material which will allow the information economy to be modelled, analysed and understood.

4.6.2 National variations

There were also considerable variations in levels of eWork between countries. These are discussed in Chapter 9 of this report.

5. Individual Forms of eWork — Developing a European Model

5.1 Introduction

In the last chapter, we outlined some of the results from the EMERGENCE European employer survey relating to 'individual' forms of eWork, that is to say forms of eWork involving individual workers working away from traditional office-type premises, either from their own homes (for all or part of the time) or from multiple locations.

These results gave us useful information on the extent to which employers in larger establishments are already making use of this form of employment. However, they could not provide us with estimates of the numbers of individuals working in this way across Europe. Since there is a clear interest amongst policy-makers in such questions, the EMERGENCE team set itself the task of developing a model of eWork which could make it possible to estimate this form of work across the EU and forecast its growth. This work drew primarily on two sources: the results of the EMERGENCE employer survey and the existing official industrial and labour force statistics. The estimates and forecasts presented in this chapter are derived from a triangulation of data from these two sources.

It must be emphasised, however, that – as pointed out in our discussion paper, *Statistical Indicators of eWork* (Huws, 2001) – the existing official data are far from adequate for this task. This exercise therefore involved making some rather large assumptions which should ideally be tested empirically by further research involving more precisely defined indicators. We do not therefore wish to claim a definitive status for the estimates and forecasts presented in this chapter. Rather, we present it as an experimental approach to modelling the elusive phenomenon of eWork which is, in our view, as accurate as can be achieved using the existing, inadequate, statistics.

As we have already noted, many of the existing classification codes used in official employment statistics represent poor indicators for the new economic activities which are arising in the

information economy. This presented us with a major challenge when it came to attempting to integrate the different data sets.

We did, however identify several points of contact between the EMERGENCE data and other statistics available in longitudinal series which enabled the main forms of eWork to be modelled.

These included:

- Establishment size. The EMERGENCE survey collected information on the number of employees at each establishment in the sample. In some, but not all European countries, information is available about the size breakdown of establishments in the national economy. In the remaining countries this has to be calculated using a combination of enterprise-level data and labour force information
- Sector. Despite the inadequacy of current sectoral classification schemes, data are available across Europe broken down by NACE sector codes. Establishments in the EMERGENCE dataset were also classified according to NACE, making it possible to plot the correspondences between EMERGENCE results and other data sources.
- Geographical location. In the EMERGENCE survey, the geographical location of respondent establishments and of their suppliers and customers for eServices as well as the remote locations of their in-house eService functions, were recorded at the level of standard EU (NUTS1) regions. This made it possible to calculate correspondences between EMERGENCE geographical data and other EU regional statistics.
- Prevalence of individualised forms of eWork. The UK Labour Force Survey has, since 1997, collected data on the numbers of people in the UK labour force who work at or from their homes in their main employment and who require the use of computer and a telecommunications link to the employer or client in order to work in this way. Cross-tabulation of these results with other variables makes it possible to calculate the prevalence in the workforce of three different categories of eWork: fully home-based eWork by employees; multilocational eWork; and 'eLancing' broken down by the employer's sector and establishment size. The relationship of this supply-side information to the demand side can be plotted using the results of the EMERGENCE establishment survey which collected data on employers' use of eWorkers in these three categories (also broken down by sector and establishment size).
- Prevalence of home-based work. The European Labour Force survey includes questions which identifies people who 'usually work from home' or 'sometimes work from home'. The results do not, however, make it possible to distinguish

homeworkers using ICTs from other home-based workers engaged in more traditional activities.

It should be noted that the data sources available covered only the EU (15) in the required level of detail. The Accession States of Hungary, Poland and the Czech Republic, although covered by our employer survey, were therefore excluded from this analysis.

5.2 Classification of individualised eWorkers

In order to combine the data from official sources with those from the EMERGENCE survey it was necessary to develop a typology which could be applied equally in each context.

The first three categories follow those used in the EMERGENCE survey. These are:

1. employees who work from home using a telecommunications link to deliver work to the employer (referred to here as *telehomeworkers)*
2. employees who work from multiple locations using a telecommunications link to deliver work to the employer. This category includes both those who sometimes work from home and sometimes from the employer's office or offices (sometimes known as 'alternating teleworkers'), and those who work from other locations, such as clients' premises. (sometimes described as 'mobile teleworkers'). This combined category is referred to here as *multilocational eWorkers.*
3. Self-employed people who supply information-based services to business clients using a telecommunications link (referred to here as *eLancers*).

As shown in the last chapter, it is possible to derive information from the EMERGENCE survey about employers' use of each of these types of individualised eWork, broken down by country and by industrial sector (but only in establishments with over 50 employees).

The official data sources also make it possible to identify a fourth category of individualised eWorker, whose presence is not visible from any employer survey. This is the self-employed individual who uses ICTs in the course of his or her work but who does not supply services to business clients. In order to take account of this group, we developed a fourth category:

4. Self-employed people in activities that do not involve the supply of business services but who nevertheless rely on the use of ICTs to work from a home base. We refer to this category as the *eEnabled self-employed.*

5.3 Analysing the EMERGENCE results — the view from the company

For each of the first three categories of individualised eWorker, the method we followed in constructing the model was essentially the same.

First, we analysed the results of the EMERGENCE survey by country, at the level of industrial sectors, by establishment size and by whether or not an establishment was a branch of a larger organisation with head office located elsewhere, in a simple bivariate analysis. This allowed certain simple conclusions to be drawn, for instance, in the case of telehomeworking, that it is more likely to occur in branch offices, in very large establishments and in the business and finance related sectors and that the use of telehomeworking by larger employers in the Netherlands, Belgium, Denmark, Austria, Germany, Finland and the UK is above the European average.

It is not possible, through this analysis, however, to separate out the inter-related effects of these variables. The analysis of each separate effect of the propensity of an establishment to conduct any given form of eWorking, while controlling for the effects of all the other factors, requires the use of logistic regression modelling.

The results of this logistic regression modelling (see Appendix 1 for a fuller account) are summarised here for each of the first three forms of eWork.

5.3.1 Telehomeworking

- Using the UK as a comparison group, France, Italy and Spain have a lower propensity to conduct telehomeworking while the Netherlands has a higher propensity.
- There is no clear relationship between establishment size and telehomeworking. However, establishments with 201 to 300 employees and those with 2,501 to 5,000 employees were more likely than those with between 50 and 100 employees to employ telehomeworkers.
- Using public administration as a comparison group, there is no clear relationship between industrial sector and the employment of telehomeworkers. Those offering non business and finance related services were less likely to employ telehomeworkers but this result was marginally insignificant.
- Interestingly, engagement in other forms of individualised eWorking is negatively associated with telehomeworking, *ie* after controlling for other influences, establishments that offer eLancing or multilocational eWorking are less likely to have telehomeworkers than those which do not.

5.3.2 Multilocational eWork

- Using the UK as a comparison group, establishments in Greece, Italy, Germany, France, Portugal and Spain all have a significantly lower propensity to conduct multilocational eWork. Interestingly, countries displaying high rates of multilocational eWork in the bivariate analysis, *eg* Denmark, the Netherlands, Poland and Sweden, were not statistically more likely to have multilocational eWorkers when other factors (*eg* industry, establishment size and establishment type) were taken into account.
- There was no statistically significant relationship between establishment size and multilocational eWork.
- Using public administration as a comparison group, establishments in all the other industrial sectors had a significantly higher propensity to conduct multilocational eWork.
- Multilocational eWork was statistically less like to take place in independent or head office establishments than in branches.
- As in the case of telehomework, engagements in other forms of individualised eWork were negatively associated with multilocational eWork. This suggests that the different forms of eWork act as alternative options for the employer, rather than supplementing each other.

5.3.3 eLancing

- Establishments in Greece, Germany and Portugal had a significantly lower propensity to employ eLancers than the UK, while Italy had a higher propensity.
- There was no clear relationship between establishment size and employment of eLancers. Establishments with between 1,001 and 2,500 employees were more likely to employ eLancers while those with 5,000 or more employees were less likely to do so.
- Using public administration as a comparison group, establishments in 'other services including education and health' had a lower propensity to employ eLancers.
- There was no statistically significant relationship between type of office (independent/branch) and the employment of eLancers.
- Finally, establishments outsourcing to companies with the aid of a telecommunications link (eOutsourcing), or other forms of individualised eWorking were also statistically less likely to employ eLancers. This suggests that individual eLancers and companies which supply eServices may be substitutes for each other.

5.4 Analysing other data sets — the labour force perspective

The EMERGENCE survey was an establishment survey designed to capture the regional, motivational and organisational characteristics of larger establishments' use of eWork. Its main purpose was not, therefore, to produce a profile of the working habits of the general population and the survey's use in the analysis of individual employees engaged in various forms of eWorking is therefore restricted. Nevertheless, through the triangulation of the EMERGENCE results with data on teleworking and employment collected from other national surveys it was still possible to develop a model of individual forms of eWorking.

So far, the UK has been the only country to collect information systematically on the use of ICTs to work from home or multiple locations over several years. Since 1997 questions have been included in the UK Labour Force Survey designed to capture different forms of home-based and multilocational working and whether those engaged in such work use and require a computer and telecommunications link. Employees in the UK are asked whether they usually conduct paid or unpaid work from their own home and could not do so without the aid of a telephone or a computer. These individuals are classified here as individual eWorkers, a category which , as already noted, is broken down into four subcategories: telehomeworkers, multilocational eWorkers, eLancers and the eEnabled self-employed.

In the first year data were collected, 1997, the UK had 90,000 telehomeworker employees. By 2001, the number of telehomeworkers had risen to 150,000, with the majority of the increase taking place in small establishments in the private sector. In percentage terms, however, growth was highest in larger establishments in the private sector.

The numbers of multilocational eWorkers increased even more dramatically during this four-year period, from 520,000 to 910,000. Between 1997 and 1999 the growth rate was marginally higher among public sector establishments and smaller private establishments.

It should be noted here that the definition of multilocational workers that we use here is based on the amalgamation of two categories: mobile eWorkers (who work nomadically from different locations) and those who work occasionally from their homes (sometimes known as 'alternating teleworkers'). It is important to note that in the UK Labour Force Survey, the estimate of these occasional teleworkers is a 'flow' measure that only captures those who have been working from home (or have used home as a base) in the previous week. It is therefore likely to be lower than the total number of individuals engaged in

teleworking identified in other studies. However, given that the probability of being included in the sample depends on the frequency of each individual's engagement in multilocational eWorking, the overall estimate will reflect their 'person equivalence'. For example, two people working from multiple locations once every fortnight have the same person equivalence as one person working from multiple locations every week. In other words, this indicator becomes, in part, a measure of the degree of multilocational working as well as the numbers of multilocational workers. For many policy purposes (*eg* for calculating the impact on traffic congestion or on environmental impacts) 'flow' measures are the most important. For others (such as gauging the impact on organisational culture or on work-life balance), then the absolute numbers of people in a population who sometimes experience this form of work may be more important.

The growth amongst the self-employed who said that they were reliant on the use of ICTs to work remotely was also significant. The total grew from 630,000 in 1997 to 930,000 in 2001; amongst eLancers (defined here as those self-employed people classified in the business services sector) it grew from 200,000 to 280,000.

Having established this growth pattern, the next task was to relate the knowledge we have of eWork in Europe at an establishment level with what we know about eWork in the UK labour force at an individual level and what we know about European employment in general at an individual level. To do this, we had to make three broad assumptions.

The first is that (all things being equal) there is an association between the proportion of large establishments that allow any given form of eWork, and the proportion of eWorkers of that type working in large establishments within each country. Thus, if we have two countries (A and B) with similar numbers of employees across similar industries, and proportionally twice as many large establishments in country A allow telehomeworking as in country B, this will translate into twice as many employees being involved in telehomeworking within large establishments in country A relative to country B.

The second assumption is that the number of eWorkers working for large establishments will reflect the number of employees working for large establishment in the country overall. This means that if country A is similar in most respects to country B (*eg* the proportion of large establishments with a propensity to allow telehomeworking) but has twice the number of employees working for large establishments as country B, we would expect twice the number of telehomeworkers.

The third assumption is that the differences in the ratio of the proportions of employees involved in any given form of eWork in

large establishments (those with 50 or more employees) against the proportions involved in the same form in small establishments (those with fewer than 50 employees) remain constant across each country. For example, if employees in smaller establishments were twice as likely to be involved in telehomeworking in country A then the ratio of 2:1 would also hold true in country B.

We recognised that these are big assumptions. As with any model, it is accepted that this represents a simplification of reality and that deviation from the assumptions outlined above will lead to variations in our predication. Specific features of the local context during the particular period under investigation will undoubtedly result in local variations. Nevertheless, certain broad trends can be discerned.

In order to even out some of the effects of local variations and minimise the effects of small sampling in some of the smaller EU countries, for the next stage of our analysis we grouped countries together into larger European 'regions'. These 'regions' were also used by the EMERGENCE project for other purposes, including the selection of case studies. Each European country is unique and any typology is likely to run the risk of bundling very disparate entities together. The EMERGENCE 'regions' are not entirely arbitrary; they follow an adapted version of Esping-Andersen's typology of European regulatory regimes (Esping-Andersen, 1990) and the rationale for their grouping is described in greater detail in Chapter 9. Here we list the members of each group, which are as follows:

1. The UK and Ireland, categorised by Esping-Andersen as 'liberal' regimes.
2. France, Belgium, the Netherlands and Luxembourg, defined by Esping-Andersen as 'corporatist' regimes.
3. Germany and Austria, also characterised as 'corporatist' by Esping-Andersen and grouped separately here partly because they share a common language but mainly because of the need to break up the extremely large 'corporatist' cluster into two in order to create groupings of more equal size.
4. Denmark, Sweden and Finland, characterised by Esping-Andersen as 'social democratic' regimes.
5. Italy, Spain, Portugal and Greece. This grouping is not included in Esping-Andersen's classification scheme. The countries were clustered together because they are located in Southern Europe and have some economic features in common (including a large agricultural sector).
6. The EU Accession States of Hungary, Poland and the Czech Republic were also grouped together for our analysis of the EMERGENCE survey results. Unfortunately a lack of comparable data at the right level of disaggregation made it impossible to include these countries in this analysis.

In the next stage of the analysis, the UK labour force survey results were analysed in order to establish the prevalence of each of the first two forms of individualised eWork identifiable from the EMERGENCE survey according to the following breakdown:

- employees working in establishments with >50 employees and <50 employees
- employees working in the public sector and the private sector.

Using the three assumptions outlined above, and drawing on the results of the EMERGENCE employer survey, estimates of eEmployees in these two categories were then arrived at for the whole EU as shown in Table 5.1.

Although in principle similar, the approach taken for modelling the numbers of eLancers and eEnabled self-employed was slightly different.

For eLancers, but not the eEnabled self-employed, we had comparative data on the use of these forms of eWork by establishments. However the labour force survey data could not give us, for obvious reasons, the size and sector of their clients.

As in the case of employees, the UK LFS is the only national survey that captures teleworking (ICT-supported home-based working) conducted by the self-employed in a time series. Unlike employees, however, we have chosen to make a distinction between two categories of self-employed workers who work from a home base and whose work is supported by ICTs.

The first category (whom we have defined as eLancers) are those who provide business and finance related services. It is this category whose use was captured at the establishment level by the EMERGENCE employer survey, which asked about the location and employment status of workers in relation to the supply of six generic business services.

Table 5.1: Estimated number of eEmployees (person equivalent)in the EU (15), 2000

	Est. no. of telehomeworkers	% of employees	Est. no. of Multilocational eWorkers	% of employees	Est. no. of eLancers
UK and Ireland	190,000	0.7	1,000,000	3.9	290,000
Benelux and France	230,000	0.8	870,000	2.8	240,000
Denmark, Sweden and Finland	100,000	1.2	510,000	5.9	70,000
Germany and Austria	230,000	0.6	640,000	1.7	350,000
Spain, Portugal, Greece, Italy	60,000	0.2	650,000	1.8	500,000
All	*810,000*	*0.6*	*3,670,000*	*2.6*	*1,400,000*

Source: IES EMERGENCE Analysis

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The second category encompasses self-employed workers who provide other services and who use ICTs in the course of their work. We have categorised these as the 'eEnabled self-employed'. In such cases, the ICTs can be regarded as means of managing and organising the business and communicating with clients, but do not constitute the means of delivery of the core content of the business as in the case of the eLancers.

Because of the imperfect match between sectoral categories, occupational categories and definitions of the generic business services used in the survey, the distinction between the two groups is not always absolutely clear. It is possible, for instance, that some of the eLancers captured in the EMERGENCE survey, for instance those involved in the supply of 'creative' functions such as design, might have been classified as artistic workers rather than suppliers of business services.

Nevertheless, it is undoubtedly the case that there are large and growing numbers of self-employed people who use ICTs but who are not supplying services to business users. We therefore felt it useful to retain a distinction between these categories in our analysis.

Although the EU-wide Community Labour Force Survey does not provide us with information about the use of ICTs by the self-employed, it does provide us with basic information about self-employment and about sector. If we use a similar methodology to that proposed for the estimation of eEmployees, we arrive at a broad estimate for the number of eLancers in Europe of around 1.4 million (Table 5.2).

The composition of this total, however reveals some striking contrasts with the picture of telehomeworking and multilocational eWork. Over a third of this total is contributed by the Mediterranean region with its estimated half a million eLancers. This exceeds all other regions and approaches the combined totals of the UK and Ireland, France, Belgium, the Netherlands and Luxembourg, at 550,000, and contrasts strongly with the very low levels of individualised eWork by employees in Southern Europe.

Table 5.2: Estimated number of eLancers in the EU (15), 2000

UK and Ireland	290,000
Benelux and France	240,000
Denmark, Sweden and Finland	70,000
Germany and Austria	350,000
Spain, Portugal, Greece, Italy	500,000
All	1,400,000

Source: EMERGENCE analysis, 2001

Table 5.3: Estimated number of eEnabled self-employed in EU (15), 2000

Agriculture	470,000
Industry	1,060,000
Wholesale, retail	640,000
Hotel and catering	150,000
Other services not business and finance related	760,000
All	3,080,000

Source: EMERGENCE analysis, 2001

For our final category, eEnabled self-employment, there were no data from the EMERGENCE survey which made it possible to generate national comparisons. Here the approach was to use a combination of data from the UK labour force survey and the Community Labour Force Survey to derive estimates based on sectoral distribution. The results of this exercise are presented in Table 5.3.

Putting all these estimates together gives us a combined EU-wide estimate which is shown in the sixth row of Table 5.4.

As can be seen, the first three rows are based on estimates of the groups who use a computer and a telecommunication link to perform their work and exclude those occasional workers who have not teleworked in the previous week, in other words, telehomeworkers, multilocational eWorkers and eLancers. Based

Table 5.4: Estimates of telehomeworkers, eEnabled workers and eEnhanced workers in Europe, 2000

	EU 15
1. Home-based employees who use a computer and telecommunications link to conduct their work. (person equivalent)	810,000
2. Multilocational employees who use a computer and telecommunications link to conduct their work. (person equivalent)	3,700,000
3. eLancers providing business and related industries who use a computer and telecommunications link to conduct their work	1,450,000
Number of person equivalent eWorkers — sum of 1-3 above (EMERGENCE narrow definition)	**5,960,000**
4. Number of eEnabled self employed workers who require a computer and telecommunications link to conduct their work not working in business related industries.	3,080,000
Number of person equivalent eWorkers — sum of 1-4 above (EMERGENCE broad definition).	**9,040,000**
Estimated number of eWorkers based on CLFS and UK LFS (including irregular eWorkers)	**9,830,000**
(ECATT estimate of 'regular' plus 'supplementary' teleworkers in Europe in 1999[1])	9,009,000

Source: EMERGENCE analysis, 2001

[1] ECATT Project, *Telework Data Report*, Bonn, 2000

on this narrow definition of individualised eWork, we estimated that there were approximately six million person equivalent eWorkers in Europe in 2000.

If we widen the analysis to include those self-employed who are not providing business or financial services, those that we have defined as the 'eEnabled self-employed', the overall estimate becomes a great deal higher. In 1999 there were over 22 million self-employed workers in Europe, 19 million of whom were not involved in the provision of business or financial services. Estimates from the Labour Force Survey (which records their ICT usage) suggest that in the UK alone there were 700,000 eEnabled self-employed individuals who were not providing business or financial services in 2001. In the absence of any other comparable data on the proportions of similar individuals in the rest of Europe, estimates for the EU 15 have to be treated with extreme caution.

Accepting this caveat, if we make the crude assumption that a similar proportion of self-employed individuals who are not providing business related services are eEnabled in the rest of Europe as in the UK then, after controlling for differences in the industrial distribution of self-employed workers, we would expect an estimate of around three million eEnabled self-employed workers.

The total number of eEnabled self-employed workers in Europe would therefore represent about one in six of the self-employed population. Adding this group to the previous estimate of eWorkers would suggest that there were the equivalent of 9 million people employed in Europe who used a computer and telecommunication link to work remotely.

It is interesting to consider whether it is possible to develop an estimate of the number of eWorkers and eEnabled workers in Europe that also includes estimates for those occasional eWorkers who did not conduct eWork in the reference period. Unfortunately, as this is very much beyond the purpose for which the original EMERGENCE survey was conducted and in the absence of any other data sources, we are restricted to estimates based on approximations using the UK LFS and the Community LFS.

The Community LFS reports the number of individuals who 'usually work from home' or 'sometimes work from home'. This definition is slightly broader than the one used in much of our analysis as it includes individuals who work from home infrequently and were not captured by the UK LFS eWork questions. Nevertheless, If we make the assumption that the expansion of homeworking has been facilitated by ICTs, then using UK estimates for the proportion of regular homeworkers who are also telehomeworkers (*ie* who use ICTs to perform their

work) and the proportion of individuals who are frequently working from multiple locations and are eWorkers would produce an estimate for Europe of around 8.8 million eWorkers in 1999.

It should be stressed that both these estimates are hypothetical and that, in the absence of any other data, a micro-level analysis of the data from the Community LFS, controlling for industrial distribution, occupation distributions, employment contracts and other related factors would be required to produce more robust results.

Nevertheless, it is interesting that this estimate, drawing on different data and using a different methodology, is remarkably close to that produced using data from the EMERGENCE survey.

The only other attempt of which we are aware to estimate the numbers of eWorkers in Europe was carried out by the ECATT project, drawing on the results of a population survey. Despite some differences in definition, here too we find very similar conclusions. ECATT estimated that in 1999 there were 6,049,000 'regular' teleworkers (both employees and eLancers using ICT to deliver their work from a distance) and about half as many again who were 'supplementary teleworkers', producing a total of 9,009,000 teleworkers in all in 1999 (ECATT Project, 2000). Given the weakness of existing indicators and definitions and differing methodological approaches, this convergence is striking and lends credibility to the conclusions.

6. Collective Forms of eWork: the Survey Results

6.1 Introduction

As we noted in Chapter 4, the EMERGENCE survey found that individual forms of eWork were outweighed in importance by collective forms, involving groups of workers at a remote 'office-type' location linked to the employer, or the employer's customers by a telecommunications link.

These collective forms of eWork have been considerably less studied than individual forms and so far no reliable indicators can be identified which would make it possible to develop models and estimates for this form of eWork as we did for the individual forms (see Chapter 5).

The survey results did, however, provide us with sufficient information about the characteristics of collective forms of eWork in the EU to enable us to identify a representative sample of case studies of eWork relocation and to develop some hypotheses to explore in carrying out this more qualitative research.

We have already outlined (in Chapter 4) some of the characteristics of telemediated employment in remote locations in terms of numbers of employees and gender characteristics. In this chapter, we briefly summarise the evidence on location and reasons for locational choice before moving on, in Chapter 7, to a discussion of the case studies themselves.

6.2 Reasons for choice of location

One striking result of the survey is that, despite the publicity given to the practice of relocating or outsourcing eWork to non-European destinations such as India or the Caribbean, such cases were strongly outnumbered by cases where work is relocated within Europe. It should nevertheless be noted that the favoured regions for remote eWork featured a number of regions outside the EU and the Accession States of Central and Eastern Europe. These included India, Russia, Western Australia and Japan as well as a number of US States.

An examination of the reasons for the choice of a remote back office location or an outsourced supplier of eServices also overturns some popular stereotyped views. Several factors were notable by their absence, including: the availability of government grants or other state incentives to choose a location; the time zone in which the region is located; and low staff turnover.

In general, by far the most important selling point is the availability of technical expertise. Next comes low cost, which is followed by a good reputation and then by reliability or high quality.

There are some variations by region, for instance in Germany proximity to customers emerges as particularly important, whereas informal networks (expressed in the reason 'we happened to know them') hardly signify, although these assume some importance in other countries.

The views of suppliers of eServices about why they have been selected tend to match those expressed on the demand side fairly closely, the most important difference between the two being the relatively low importance given to their technical expertise by eServices suppliers and a somewhat lower importance given to cost. There are also some differences by function.

Customer services and telesales

For the customer service and telesales functions, the requirement to be near other parts of the organisation was mentioned the most often, followed, in the case of customer services, by 'good reputation/market leaders' and then 'low cost or competitive tender' and in the case of telesales by 'proximity to customers'.

Data processing

In data processing and typing activities, by contrast, the most important reason for choice of an outsourced or remote destination for data processing was 'low cost/most competitive tender', accounting for 22.5 per cent of all the reasons cited on the demand side. This function was also more likely (though not exclusively so) to be located in regions where wages are somewhat below the EU average, including Attica, Lombardy, the Madrid region and the Czech Republic. In higher-wage countries, non-capital regions are more likely to be preferred for this activity, including Bayern and Baden-Wurttemberg in Germany, the Northeast of England and Mediterranean France.

Software development and support

The top locations for software development and support fall into three distinct categories: first, the Accession States of Poland, Hungary and the Czech Republic; second, capital regions or

highly-developed urban regions with strong service sectors, including Brussels, London, Lombardy, Nordrhein-Westphalia, and the Madrid Region; finally, 'secondary' regions including the Emiglia Romana region of Italy, Northeast Spain, Southern Spain and the Bremen region in Germany.

By far the most important consideration when choosing a software supplier is technical expertise, which constituted 31.2 per cent of the reasons mentioned on the demand side and 22.3 per cent on the supply side. This is buttressed by a requirement for quality, reliability and a positive attitude (10.9 per cent and 20 per cent of reasons respectively). However, the need to find these qualities is balanced by a search for low cost, which constituted 13.2 per cent of reasons cited on the demand side, though only eight per cent on the supply side.

Financial services

For financial and accounting services, the top region in both absolute and per capita terms is Baden-Wurttemberg. Otherwise, the top ten list is divided between relatively high-wage, high-skill capital or metropolitan regions (including London, Brussels, other German regions and parts of the Netherlands) and lower-waged Poland where there appears to be a strong culture of outsourcing.

The reasons given for the choice of a remote or outsourced supplier of financial services are more evenly spread than for most other functions, the most commonly cited being the existence of a longstanding relationship. This is equalled on the supply side by reliability and quality. A good reputation is also important. For this function a strong degree of trust seems important, and quality and probity may count for more than competitive costs.

HR, management and training

According to the evidence of the EMERGENCE survey, human resources, management and training functions tend to gravitate towards major metropolitan regions. The top ten regions (adjusted for size) include Brussels, Antwerp, Madrid, London, Berlin and the highly urban regions of the North and East Netherlands and the West Midlands of the UK. In absolute terms, Lombardy (which includes Milan) and Nordrhein-Westphalia (which includes the conurbations around Dusseldorf, Dortmund and other cities) are also included, as well as Sweden.

Otherwise, the presence of Poland and the Czech Republic amongst the top ten testifies, once again, to the importance of outsourcing in these countries, perhaps partly driven by the need to buy in expertise from outside during a period of rapid modernisation, or by the presence of many branches of companies managed from elsewhere.

Turning to the reasons for choice, we find that for HR functions the dominant tendency is the search for quality and reliability. The strongest reason stated (23.1 per cent of reasons on the supply side and 14.1 per cent on the demand side) is that the choice was made on the basis of a good reputation or a leading position in the market. This is followed by reliability and quality, which is in turn followed by the existence of a longstanding relationship, partnership or alliance. Value for money appears in more or less equal third place alongside this factor, being given slightly higher importance on the demand than the supply side.

Creative activities

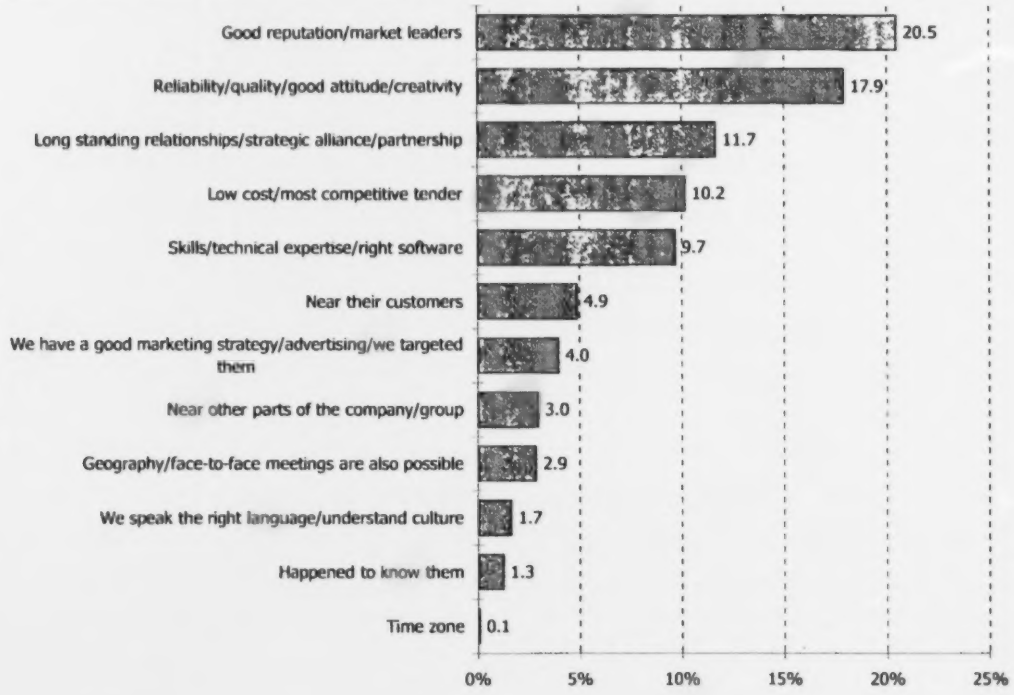
The list of top ten destinations for creative services (including research and development, design, editorial, multimedia and other forms of content generation) includes a high proportion of regions in Southern Europe, including those surrounding Madrid, Athens and Milan. This is perhaps a reflection of the strong informal economy and high use of outsourcing in the Mediterranean regions as well as the strength of these regions in design. They are joined by the South of France as well as three regions (two in Germany and one in the UK), which also appeared as destinations for data processing work.

Good reputation and high quality both feature as important reasons, as do low cost and a longstanding relationship. On the demand side technical expertise is also rated highly, although this hardly figures on the supply side.

Figure 6.1: Reasons for choice of outsourcer for eServices — the demand-side perspective

Source: EMERGENCE European Employer Survey, 2000 (IES/NOP). Weighted figures; Base=4,154. Respondents who obtained eServices from another region were asked why they chose that region or supplier and were able to select several reasons for each instance of relocation. Percentages are based on the total number of reasons.

Figure 6.2: Reasons for choice of outsourcer for eServices – the supply-side perspective



Source: EMERGENCE European Employer Survey, 2000 (IES/NOP). Weighted figures; establishments with >50 employees in EU (15) plus Hungary, Poland and Czech Republic. Weighted base: 9,068. Respondents who supplied customer services to another region were asked why they thought their client chose them and were able to select several reasons for each instance of relocation. Percentages are based on the total number of reasons.

On the supply side we find that providers of creative eServices credit good marketing with making a substantial contribution to their success in gaining contracts. This is also the only function in which time zone features as a significant reason on the supply side.

Figure 6.1 summarises the reasons given for the choice of location or external supplier from the demand side. Figure 6.2 presents the view from the perspective of establishments that supply eServices to remote clients.

7. Collective Forms of eWork: the EMERGENCE Case Studies

In 2001 the EMERGENCE team carried out 62 company case studies (covering 54 relocation cases) in 18 European countries. This report presents a synthesis of the results, based on a detailed comparative analysis of the 62 case study reports.

The focus of the case studies was collective eWork, defined as information-processing work carried out at a distance with extensive use of computer systems and on the basis of telecommunication links. Each of the case study reports dealt with a transregional or cross-border relocation of eWork from a 'source' location (where the eWork is coming from or where it is managed from) to a 'destination' location (where the relocated eWork is being carried out). Every case study was based on several qualitative interviews with respondents from the investigated companies (utilising the EMERGENCE guidelines that served as a research instrument).

Although eWork may take a variety of forms, including 'individualised' forms such as telehomeworking or multilocational eWork, for the purposes of this study the qualitative empirical work within the company case studies focused on work delocalisation in shared office-type premises. However the case studies covered both internal eWork (carried out by employees of the company) and outsourced eWork arrangements. Only telemediated work in which a clear role of ICT could be detected qualified as an object of study.

The results of the EMERGENCE 18-Country Employer Survey, described in Chapter 4, were taken as a framework for building a corresponding sample of delocalisation cases that would be spread across a heterogeneous mix of business sectors and distributed across the seven generic business functions that were identified at earlier stages of the EMERGENCE project. These seven functions and the number of relocation cases per function in our sample are shown in Table 7.1. One additional case dealt with the delocalisation of the function of logistics.

The distribution of relocation cases in terms of outsourced versus internal solutions is about 60:40; approximately one-third of the

Table 7.1: Breakdown of case studies by function

1. & 2.	Telesales & Customer service	18
3.	Data processing/data-input	5
4.	Creative functions including R&D	10
5.	Software development, IT-maintenance and support	14
6.	Accounting and other financial services	2
7.	HR management and training	4

Source: EMERGENCE project

source companies (*ie* companies from which eWork is being relocated) studied are SMEs, defined as having less than 200 employees. The sample of relocation cases consists of a balanced mix of 27 transregional and 24 cross-border relocations (these 24 delocalisation processes included 8 transcontinental cases) as well as three mixed relocation processes (*ie* involving both a transregional and a cross-border relocation).

7.1 Background and objectives of relocation

It is often assumed that the norm in such cases is a one-off relocation of eWork from location A to location B (*eg* the relocation of software development to India or of call centres to regions with low wage costs). The EMERGENCE case studies show this is in fact only one of several different types within a diversified landscape of the delocalisation of eWork.

Taking into consideration the primary objective of the relocation as well as the background within the source company different types of relocations can be distinguished.

Alongside isolated rationalisation measures through which jobs in the previous location are replaced by those in another region or another country, the objective may for example be the expansion of activities or the assumption of new activities at another location.

In addition, many relocations do not take place as isolated measures but arise from the reorganisation of a major group. Here, too, expansionary or replacement variants of relocation may occur.

Geographical relocation may either be part of the original objective or not represent a primary aim at all and may only arise incidentally as a consequence of outsourcing to another company. Other factors that contribute to relocation decisions are company-specific competition advantages that only partly have anything to do with the location of the company. Thus, regional push or pull factors do not lie beneath every relocation. As a consequence, the conclusions for regional policy-making cannot just be limited to aspects of location policy, *ie* to the question of attracting new *eWork* investment.

Table 7.2: Typology of cases

background/ cause: / primary objective:	Company reorganisation		Isolated measure	
	Concentration (Reduction)	Decentralisation (Expansion)	Complementing (Expansion)	Replacement (Reduction)
Geographical relocation	**I** Archi Bugdom Celia Cosmed Call4Dublin ITcomp Lecky Parcel Phamon Sporty	**III** Betty Crownsoft & Dunasys Globecom Hub Teleco IIA LabourOffice Madadata Softwork Citrus Paul	**V** BioBelindus Cassandra Cosmopol & Brandfree Cosmopol & Air-call GMS JOE SCC Telehealth WebMagy	**VII** Childy Flighty-Coup-Mum Qualicall Secure TNT Himmelblau
Outsourcing	**II** SCF RegioBank Technoshop Tourgoff & Eurocall	**IV** Call Bank Handitech Translate Webnet	**VI** Compass GovContact Intermed Microweb Safe Invest	**VIII** Cable Minicall Text T-Bank

Source: EMERGENCE project

On the basis of the 54 relocation cases, a typology of large-scale eWork relocation was elaborated, as shown in Table 7.2. Each case study was given a nickname in order to ensure anonymity and it is these nicknames which are shown in the table.

As a rule the various types of relocation correspond to different motives although all motives given below may be or become relevant in each type of relocation. Among the considerations which form the framework within which decisions are made about the delocalisation of eWork the following main motives can be discerned:

1. Cost savings achieved by economies of scale (including synergy effects, harmonised procedures and standardised working methods) – this is especially relevant for relocations in the course of company reorganisation.
2. Cost differences between regions and/or companies (*eg* wages, rents, taxes *etc.*) – these are especially relevant when outsourcing is opted for or new destinations in pull-regions are being sought.
3. Availability of labour and expertise – these motives might even result in higher costs at the destination location but in most cases lead to a reduction in costs too (*eg* software development in India or CEE countries).

However, these motives should not be interpreted as simple triggering forces for relocations; very often complex decision-making and interaction processes lead to the delocalisation of eWork even though at the beginning maybe only outsourcing was desired. In some cases a single project-related relocation may turn into a more permanent relocation and hence result in a co-operation between source and destination locations; or it may be the case that coincidences, networking and previous contacts within companies or within groups of companies lead to the idea for relocation. Last, but not least a significant proportion of relocations are due to company reorganisation, where for example existing locations are used to harbour a concentrated function.

It should also be mentioned that the delocalisation of eWork is quite a far-reaching and big decision, which is not easily made, even after pondering the cost differences: most companies (apart from multinationals or very big companies) are still quite reluctant to go for such a decision that might hold quite a few unpredictable developments and outcomes. This finally also means that even if the diversity of relocations, which goes far beyond the oft-cited examples, seems to suggest a high level of mobility of eWork, it cannot be concluded from the EMERGENCE company case studies that the thesis of the 'unimportance of the location' or 'any location will do' applies. On the contrary, it is precisely the delocalising potential of new ICT that makes the characteristics of locations even more important (Huws, 1999).

Two functions, customer services and IT, are singled out in the report for special study. These emerged from the EMERGENCE employer survey as functions in which eWork is particularly prevalent and also form an interesting contrast.

7.2 The relocation of the customer service function

7.2.1 Crucial pull/push factor: Availability of call centre operators

Personnel shortages or a high turnover in call-centre operators can be identified as a major regional push factor and motivation for the relocation of customer service operations. Sometimes the shortage of operators can arise from the concentration of too many call centres in one region and hence increased competition for staff between call centres, which in turn contributes to high labour turnover. However, these high turnover rates are also due to the often monotonous and standardised nature of the work. High labour turnover leads to exploding costs in the companies because operating and experiential knowledge, which has to be replaced each time an operator leaves, is continually being lost. The delocalisation of the customer service function can take different routes and shapes and, not surprisingly, cost savings are a motivating factor in most cases:

- Economies of scale in the course of centralisation make it possible to spread fixed costs (for IT support, training, administration, infrastructure, *etc.*)
- Operations that go into rural regions utilise the city-rural wage differential, claim public subsidies and expect lower turnover among the operators, which again leads to lower costs
- Developments such as e-government, e-health and e-banking *etc.* aim in the long term to achieve cost savings by reducing personnel or using resources more efficiently
- In terms of location decisions there is a significant difference between the conditions in urban areas as compared with rural ones, which affects the delocalisation strategies of companies:
  - Metropolitan areas can often rely on a larger pool of potential operators with the suitable skills (different foreign languages) and availability (flexible working hours). At the same time, the location of many call centres in these urban areas can lead to intense competition for staff and operators becoming a scarce asset.
  - While rural areas are attractive call centre locations because lack of alternative employment opportunities ensures low staff turnover, they offer limited resources in terms of the amount and profile of available operators: rapid staff growth in times of expansion is sometimes not possible.

Next to centralisation developments (*eg* the setting up of pan-European customer service centres) there also are decentralising tendencies, which are due mainly to regional push factors, such as labour market shortages. Decentralised forms of eWork might consist of several physically and spatially dispersed units that are turned into a single virtual operation by means of ICTs. The establishment of virtual structures creates independence of location and limitation of risks, which is not possible with a single centralised location. This means that, for instance, in times of operator shortages or technical difficulties at one physical location the 'call traffic' can be directed to other locations within the same virtual structure.

Technological facilitators furthering the delocalisation of eWork are:

- A high degree of digitisation of information and thus electronic access to it
- Access to information systems and knowledge bases in which all operations and customer calls can be documented, through which details of all past interactions and relevant data are swiftly and effectively available for every customer contact (regardless of which operator or which site is dealing with them).

7.2.2 Co-operation, communication and consideration of soft issues

What seems technologically feasible in the planning phase can in reality lead to numerous obstacles and considerable problems if informal and social structures and soft issues (such as the perspectives and perceptions of those concerned) are not sufficiently taken into account. Successful delocalisation of eWork is considerably shaped by a climate of co-operation and trust between the employees at the source and destination locations and continuous knowledge and information transfer. Such a co-operative atmosphere is (in most cases) created if those concerned at the source location were actively involved in the decision-making and relocation process and if the relocation did not lead to a threat to jobs and a cutback in the content of work. In most cases companies are convinced of the necessity for regular face-to-face meetings in order to ensure sufficient information transfer and to create an atmosphere of trust.

Quite the reverse of the much rumoured 'death of distance' in the ICT-dominated new world, the case studies analysed here reveal that physical distance still poses real problems, although a variety of expedients have been developed to address these.

7.2.3 How long is the butterfly going to stay?

Even in the face of severe personnel shortages, many companies are reluctant to train the regional workforce, and fresher meadows elsewhere are often more attractive to butterfly companies than the improvement of the existing location. And it is precisely the high level of digitisation of information and standardisation of work processes developed for the initially relocated call centres that can act as a facilitator for potential further relocations. That means that not only experience gained from previous relocations, but also the very organisation of relocated work increase the chance of a further change of location.

7.3 The relocation of the IT function

In Europe, major labour-market shortages in IT specialists have been diagnosed in recent years. Such shortages in local labour-market segments lead to increased turnover and wage costs. If a relocation is the result of labour shortage at the previous location, it is mostly closely linked to the cost factor. On top of this, there are unattractive companies who are the first to feel it when the labour market situation is more favourable for workers. Thus companies with little to offer to IT specialists in terms of further training or career opportunities come up empty-handed when attractive companies can still afford to pick and choose.

In the context of the EMERGENCE relocation cases in IT, the following core objectives or motives for relocation were found:

- Labour-market-induced or -oriented relocation
- Knowledge-oriented relocation
- Relocation to reduce personnel costs
- Centralisation to exploit economies of scale

In terms of employment effects in the countries the work is coming from, it is frequently argued that relocation will lead to expansion and thus the securing and creation of new jobs for software developers and IT specialists in the source countries too. In some of the case studies this development indeed came about, yet in other cases successful and long-term relocation relationships in the end also led to the replacement or the loss of jobs (although this was sometimes masked by the progressive non-replacement of leaving staff) as more tasks and responsibilities were transferred to the far away plants.

The ten cases involving cross-border relocations of the IT function include the delocalisation of eWork to India, CEE countries, the US and Siberia, countries that are mostly much cheaper in terms of personnel costs (with the partial exception of the US) and that have labour markets with larger numbers of available and highly skilled IT experts.

One crucial conclusion from these studies was the importance of elaborate learning processes related to forms of division of labour, formalisation of project work, communication and cultural aspects of co-operation. In the cases studied, the considerable differences in personnel costs meant that overall cost savings were achieved despite relocation and management expenses. The extent of these savings varied greatly, however. With regard to the Indian cases, drawbacks arose from the comparatively high turnover of IT staff. The companies thus attempted to design the work so that it was attractive for the Indian software developers. From this it follows that on the one hand it is not sensible to relocate just the simple (coding) work to India. On the other hand the relocation of customer-specific software development is difficult since it requires more intensive interaction.

Whether looking at the locations for software development in India or in Central and Eastern European countries, the general trend is towards upgrading the remote plants, in the sense that they are granted more independence and that more responsibility for whole projects is transferred to them. In India this has a lot to do with the labour market situation. Companies must endeavour to be attractive for highly qualified IT specialists. In CEE countries a trend towards upgrading software plants in order to simplify organisation and increase staff motivation can also be observed or is to be expected.

7.4 Organisational and technological demands and consequences

The delocalisation of eWork puts considerable demands on organisations. Depending on size, age and corporate culture, a company's organisational structure and work routines can either facilitate or hamper the relocation of work. In the light of the EMERGENCE company case studies the following organisational facilitators seem to be the most important ones:

- existing contacts with partner companies and support from parent companies
- clearly delineated tasks or projects including a high degree of standardisation and formalisation as well as exact specification and documentation of the eWork to be done
- workers' involvement in the preparation and running of the relocation
- adaptation of work organisation and technology to the new environment
- organisational change at the source in order to adapt to the new division of labour
- dedicated and extensive efforts regarding knowledge transfer and training.

Within relocation projects two phases can be distinguished: phase one consists of the preparation and setting up of the destination location. Here it became obvious that large companies or multinationals have certain advantages of support, experience and contacts from parent or partner companies. In contrast, SMEs often have to build all this up from scratch. In phase two eWork is being transferred to the destination location and a continually developing relocation relationship and co-operation emerges. In both phases the additional work due to making tasks explicit, trying to specify them and designing rule books, training and knowledge transfer issues, conceptualising communicative and co-operative structures *etc.* should not be underestimated.

Nearly all case study reports highlight the crucial role of ICT for delocalising eWork. Regardless of the business function concerned, the dissemination and frequent use of electronic mail is making a big difference in day-to-day communication and co-operation. Although telephone and face-to-face meetings are assessed as very important for co-operating over distance, most of the respondents stated that the major part of information flow is based on email. The importance of other ICT applications varies according to function and work organisation: spatially dispersed but organisationally integrated customer service units depend on a high level of technical integration. This implies a common technical infrastructure and working on the same information

systems. But also software development, accounting or design functions often rely on information systems that can be accessed from different locations.

In most cases the relocation of eWork results in more or less intensive co-operation between the source and the destination establishments involved. While this is quite obvious for the types of decentralising and expanding relocations, the concentration of activities at one location usually also implies changed, but ongoing interrelations between, for example, centralised IT or customer service units and dispersed subsidiaries of the company.

The general picture that emerges from the experiences investigated in these case studies is that most relocations create or intensify co-operation over distance, which triggers organisational and technological change processes leading to higher levels of formalisation and digitisation of information and communication. The core aspects of this change relate to the transformation of tacit experiential knowledge into explicit knowledge and a shift towards comprehensive documentation and digitisation of information relating to customer contacts, products, projects *etc.*

7.5 Employment aspects

The numbers of jobs lost or gained at a particular location depend on the type and the scale of the relocation project. As summarised in Table 7.2, there are two types of relocation that by definition result in job loss at the source location: concentration of activities in the context of company reorganisation and replacing relocations as isolated measures. Some of the relocations concern a considerable number of jobs. The reduction of jobs at the source location does not in all cases lead to redundancies, however. Sometimes employees are transferred to other jobs in the company and sometimes they are offered the option of moving with their jobs to the new location. When there are redundancies, negotiations on the terms are frequently made that result in more or less generous social plans regulating severance pay *etc.*

The positive employment effects at destination locations are usually limited if we look only at individual cases of relocations. Total job creation through the location of eWork however may be considerable. The central and eastern European countries and India are gaining employment in particular through the relocation of software development. It can be observed that cities and metropolitan areas are gaining most while smaller towns only appear to attract IT jobs if they have an important university. Job creation through the location of call centres also favours large cities if language skills for pan-European customer service and a large pool of flexible labour are required. But the case studies also revealed a trend in the opposite direction: mono- or bilingual call centres are also being set up in, or relocated to, rural and peripheral regions where labour turnover and wage levels are

lower. In rare cases these locations have been favoured by government policies.

7.5.1 Call for mobility

At the outset of the EMERGENCE project we hypothesised that the relocation of eWork could be conceived as a movement of tasks or jobs with workers at one location losing and workers at another location gaining employment. What we certainly underestimated was the movement of people involved in the relocation of eWork. Relocations put high demands on people's physical mobility. This can be the direct consequence of relocation insofar as workers have to move with their jobs if they want to keep them. In addition, companies relocating call centres often motivate employees to move to the new location to support the knowledge transfer. But there is a lot of additional mobility required: managers go abroad to set up and direct new units or companies; specialists train new workers at new locations; people co-operating over distance travel to regular meetings *etc.* In the light of our case study findings the popular image of eWork bringing the work to where people live instead of people having to commute to work doesn't apply in many cases.

Some of the employment (and career) consequences of increasing demands on mobility are obvious: work organisation favours young, single and childless workers for jobs that involve a lot of travelling. This applies, for instance, to call-centre agents taking on employment abroad, and to researchers who move with relocated laboratories as well as to project leaders who have to visit relocated software development units on a regular basis.

7.5.2 Sustainability of relocated eWork

Last but not least, several grounds could be found for concluding that relocated eWork offers less stable employment than comparable workplaces. First, the reasons for locating work in a particular region may vanish (be it labour market situations or relative cost advantages); second, the very economic processes and corporate strategies that led to the relocation may lead to further reorganisations threatening the employment created through the first relocation; and third, organisational and technological change necessary for relocating eWork will result in work organisations and information systems that make work easier to relocate again. Thus it can be concluded that the butterfly is not likely to settle for good, both because the conditions keep changing and because fluttering from blossom to blossom becomes easier every time.

7.6 Logics of corporate restructuring

The EMERGENCE case studies on ICT-enabled relocation of work did not just yield insights into the delocalisation of work; they can also be used as a window onto current workplace and corporate restructuring processes. This is not to say that ICT should be seen as a causal factor of such restructuring, nor do we assume a single trend towards delocalisation and virtual organisations. Rather, modern ICTs widen the range of organisational options available to companies and in particular enable spatially distributed working. The 'hollowing out' of companies and the establishment of 'supply chains' (Gereffi and Korzeniewicz, 1994), trends known from manufacturing industries, increasingly apply also to information work and computer services. European and North American companies thereby not only redirect routine activities to developing countries, for example, but also relocate key research, design, programming and maintenance work (UNCTAD 2002: 11). But it is also true that ICTs are used to concentrate work in single locations as has been illustrated with EMERGENCE case study findings above. Hence, one of the conclusions of the research is that different logics of restructuring do currently co-exist, and no particular development can be generalised and heralded as the main pattern of work in the 'information society'.

The examples and types of relocation of eWork presented above have already indicated the variety of restructuring strategies and processes. By way of conclusion we would like to focus on different logics at work in the use companies make of new technologies for the relocation of work. This is meant to contribute to a more realistic picture of the structures of today's and tomorrow's workplaces.

7.6.1 The micro-enterprise logic

The micro-enterprise producing software, designing web-sites or providing IT services using the technical infrastructure for the small office/home office (SOHO) is often seen as the basic unit of the 'information society' (Reichwald and Hermann, 2000). These companies, often start-ups, are particularly likely to network with others when producing their goods or services: The entrepreneurs may be weary of expanding through employing workers because they are not sure whether they can employ these to capacity owing both to fluctuations in demand levels and to rapidly changing skills needs. Turning to an alternative strategy based on co-operating with freelancers or other micro-companies allows them to reduce, or pass on, the risk. New ICTs help to organise co-operation and to communicate efficiently. For micro-companies the Internet is the crucial infrastructure.

Micro-enterprises may relocate work across borders by employing subcontractors in other countries. In contrast to establishments belonging to transnational corporations, however, they cannot rely

on infrastructures and central support services. One of the reasons for going abroad is their difficult situation on the labour market: They are much less attractive employers for IT experts, for example, than large IT companies. If we look at micro-enterprises and their networking and relocation activities we have to take into consideration also that some of them act as brokers mediating between the supply and demand for services. Both their small size and their intensive networking are due to the very nature of their business activities and should not lead to generalisations about the organisational structures of IT-related business activities.

7.6.2 The logic of the global corporation

The discussion on the network society and on micro-enterprises should not prevent us from placing the relocation of eWork in the context of corporate restructuring used by global or transnational enterprises to seek the most favourable location world-wide for each of their functions (Kogut, 1985; Dicken, 1992; Dunning, 1993). Intensified competition in the face of globalisation and the increased profit expectations arising from the dominance of financial markets are putting enterprises under pressure actually to exploit the cost-cutting and innovative opportunities that can arise from such a distribution of functions. The attractiveness of regions and cities for new locations is evaluated in relation to a particular function, be it production, research and development, marketing or accounting, and no longer with regard to the demands that the whole enterprise makes on a location.

The restructuring of companies on a national, European or global level is further aimed at the utilisation of economies of scale. European integration in particular enables companies to align their business directly to a supranational market. Costs can be cut by merging previously separate establishments and activities orientated towards national markets. It is indeed to be assumed that the most favourable location will be sought for the merged functions, but as a rule, in such a process, some existing establishments are expanded and others closed.

A third aspect of transnational companies relates to processes of governance. In many enterprises bureaucratic structures have to a certain extent given way to decentralised responsibilities and internal quasi-market relationships intended to increase both flexibility and management control. On the basis of standardised technical infrastructure and business processes and under the supervision of corporate headquarters using sophisticated management information systems, work can be relocated swiftly between the corporate units. For example, an order for an administrative service or software development can be advertised worldwide within the corporation and given to the unit offering the best value. It is important to note that the Internet, EDI and similar standards are not the only facilitators of the relocation of work. In all sectors integrated computer systems in the form of

systems for 'enterprise resource planning' (ERP) are gaining importance. They support the centralisation and standardisation of information processing and thereby make the delocalisation of work easier. Some of the case study companies had already used, or recently introduced, an ERP system from SAP, one of the leaders in the ERP market. In a way, what the network, epitomised by the Internet, is for the world of the micro-enterprise, the centralised ERP system designed for hierarchical use seems to be for the world of the global corporations.

7.6.3 From outsourcing to a new corporate division of labour

We usually look at outsourcing from the perspective of the company that uses subcontractors instead of its own employees for particular activities. Since the early 1990s, there have been reports of companies reducing their activities and relying on suppliers for more and more business functions. Network firms control global activities with only a handful of employees of their own. This experience seems to be behind the assumptions of a network economy populated by small and flexible enterprises. What is often overlooked however is where the work is moving to through outsourcing. Freelancers and SME subcontractors are only one part of the picture. The other part consists of large, global companies offering goods and services to other businesses. In the case studies on the relocation of the IT function, for example, quite often the activities were outsourced to multinational companies specialised in IT services. A similar trend can be observed in the manufacturing of, say, automobiles where not only the core companies but also many of the first-tier subcontractors are large multinational companies. What is observed as a relocation of work is part of a process whereby integrated companies give way to specialised ones built around narrowly defined core competencies. This means that outsourcing has resulted in a different division of labour between companies rather than having led to the dissolution of the big corporation.

7.6.4 The logic of foreign direct investment

Parts of the relocation of eWork follow the logic of foreign direct investment (FDI) whereby companies relocate work, or expand activities, to other countries in search of particular advantages. Access to the market, (labour) costs and available skills and knowledge seem to be the main motives. In the literature on FDI a distinction is made between different phases of activities of foreign companies (Dunning, 1993). The EMERGENCE case studies on eWork also revealed that relocations are best understood as open-ended processes rather than one-off measures. First, some features of the local situation, for instance changes in a particular regional labour market, may change, leaving the location less attractive to the relocating company. In

such cases particular activities, such as data entry (for which companies seek low wages) may be relocated to a second destination when wages rise in the first. The establishment of call centres is also very sensitive to changes in the labour market.

As far as the relocation of software development is concerned the situation is often quite different. Although many relocations are, at least in part, cost oriented, the new establishments may develop further and gain a more stable position within the company or the network of firms. Whether one looks at the locations of software development in India or in Central and Eastern Europe, the general trend is in the direction of upgrading the new plants, in the sense that they are granted more independence and that more responsibility for entire projects is transferred to them. In India this has very much to do with the situation on the labour market. Companies must endeavour to be attractive for highly qualified IT specialists. Of course, there are sufficiently high qualifications and organisational processes there that make it possible to take on high levels of responsibility. The limits are in the relatively high staff turnover and the usually still difficult co-operation between Indian IT specialists and European customers.

In Central and Eastern European countries, this trend towards upgrading software plants to simplify the organisation and increase staff motivation can also be observed or is to be expected. Thus, staff turnover has recently become an issue in the capitals of Central and Eastern European countries, and the outsourcing strategies here are changing; it is, for example, one of *Crownsoft's* objectives to upgrade the locations and devolve responsibility for projects to the subsidiaries. 'Of course, we see the risk in developing our own competitor. I have already discussed this with the managing director several times: what happens if our customers decide to employ the subsidiaries directly?' (Workers' representative at *Crownsoft*).

7.7 Conclusions

The colourful picture representing various kinds of (collective) relocations of *eWork* may lead to the impression that 'anything goes', *ie* that new ICTs open up a variety of options for relocation and spatial restructuring of work. However, the typology the analysis of the EMERGENCE case study findings resulted in, and the different logics behind the restructuring processes clearly show that not all that is technically feasible is actually likely to be realised. The main trends seem to be the following:

- spatial concentration of activities to yield economies of scale
- expansion and decentralisation of activities to tap remote labour markets or to capitalise on wage differentials
- getting access to knowledge by way of co-operating over distance

These findings are only partly in line with the popular image of the network economy. Of course, ICT-supported networks of micro-companies and outsourcing to freelancers are important trends. However, restructuring of transnational companies is showing decentralisation and concentration at the same time. This mainly means that the dissolution of the big enterprise cannot be seen as the main trend. Rather, new ICTs that may lead to decentralisation and delocalised work are widely used also for centralisation and for reaching economies of scale. It is interesting to note however that in spite of strategies of concentration the workplace as a social entity may nevertheless suffer from restructuring: ICTs make it easier both to split up business processes and to bring together similar tasks in one location. As a consequence, co-operation over distance becomes more wide-spread even if big establishments are not dissolved and work is not being dispersed to micro-companies. Along with this increasing spread of co-operation over distance not only might the skill needs change but there may also be further demands on the mobility of workers. This in turn discriminates against the less mobile workers, for example those with care obligations, damaging their career opportunities or even jeopardising their employment altogether.

8. Is Small Finally Becoming Beautiful? Small and Medium-sized Enterprises in the New Economy

8.1 Introduction

Much of the literature on eWork and on the information economy emphasises the changing roles of Small and Medium-sized Enterprises (SMEs). In this chapter we draw on the results of the EMERGENCE survey to address some of the questions raised in these debates. To what extent are small companies actually making use of eWork and the potential to relocate information activities? Are SMEs practising eWork as frequently as – or even more often than – big companies? Or are they unable to cope with the technological revolution and the challenges of globalisation? And what about the supply side of the trade in information activities? Are SMEs attractive suppliers of remote information work to bigger companies? What are the comparative advantages and disadvantages of SMEs compared to large corporations?

In other words, our focus is on the role of SMEs in the new economy, in the changing international division of labour and the trade in information service activities.

The study is based on a number of hypotheses on the position of SMEs in the new economy, derived from a literature survey. A focused analysis of the empirical findings from the EMERGENCE project allows us to test and refine these hypotheses.

8.2 What is an SME? The EMERGENCE operationalisation

In order to investigate the role of SMEs in the new economy and the trade in information activities, a clear definition of small and medium-sized enterprises is necessary. Among all the criteria being used to distinguish SMEs from large companies, the number of employees is certainly the most common one. However, there appears to be a complete lack of international consensus about where to put the cut-off point [1]. Because of the lack of a uniform,

[1] For example, whereas a Belgian company employing 51 employees is already considered to be a big one, a German or American company

globally accepted definition of an SME, we had to construct our own definition, which, like any other definition, is to a certain extent arbitrary. In EMERGENCE, an SME has been defined as a company employing up to 200 employees.

SMEs account for the overwhelming majority of all companies and make a very crucial contribution to total employment. Over the years, the numerically dominant position of SMEs has even increased because of a number of interrelated factors such as the tertiarisation of the economy, increased downsizing of big companies, increased outsourcing in more transparent markets characterised by lower interaction costs, the dysfunctions of traditional large companies and virtues of small companies in a rapidly changing economic environment. Of course, numerical dominance does not mean dominance in the sense of economic leverage.

Typical weaknesses of SMEs are, among others, limited financial resources, a low degree of professionalism, difficulties in recruiting qualified staff and skilled workers and the absence of economies of scale. Typical strengths, on the other hand, include flexibility, adaptability, speed of decision-making and a simple and flexible organisation structure (see, *inter alia*, Delmotte *et al.*, 2002).

The comparison of (different types of) SMEs and big companies on a number of eWork and eSupply related variables can contribute to explaining the specificity of SMEs in the new economy as well as clarifying their role in the trade in information activities. As already noted, this was be done on the basis of a number of hypotheses that are derived from literature and tested by means of the empirical data from the EMERGENCE survey.

8.3 Less eWork in SMEs?

Literature on SMEs in the new economy is characterised by two, at first sight contrary, streams. On the one hand, SMEs are often considered to be 'the most dynamic sector of the knowledge-based economy' (OECD, 1999, p. 33); they play a 'significant role as a source of innovation during the early stages of new and emerging technologies' (Motwani *et al.*, 1999, p. 106). But on the other hand, there is a body of literature expressing the fear that SMEs are not able to cope with the technological revolution and the challenges of globalisation. This fear mainly results from the observation that

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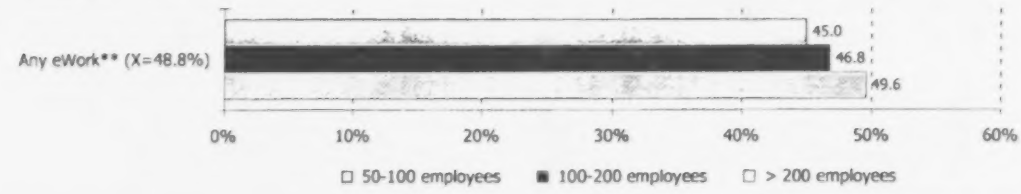
employing 499 employees is still an SME. The majority of EU countries use a cut-off point somewhere in between these extremes (*eg* 100 employees in the Netherlands, 200 in the UK). There is not only a lack of consensus between individual countries, but also between international bodies representing these countries: whereas an SME can employ up to 249 employees according to the EU (Eurostat), the OECD is working with a definition going up to 499 employees (Delmotte *et al.*, 2002).

SMEs are often at a disadvantage in their access to new technology: 'SMEs generally adopt technologies more slowly than the average firm, and this also applies to the adoption of Internet technologies' (OECD, 2000b, p. 5). Many technology surveys and monitoring systems indeed show that SMEs often have limited technological possibilities, a less advanced IT infrastructure, fewer external network connections, *etc.* (*eg* EITO, 2001; Schienstock *et al.* 1999a). Smaller firms less frequently have access to the Internet[1] and if they do, they use the Internet for more basic applications than bigger companies. Very often, the technological arrears are ascribed to limited financial resources (*eg* Schmidt, 1996), a lack of expertise or professionalism (Delmotte *et al.*, 2002), limited understanding of the complexity of *eg* e-Commerce (OECD, 2000a), a shortage of suitable and well-educated personnel (Cowling and Storey, 1998), or the perception that the Internet is not relevant for the enterprise (EC, 2000), *etc.*

Because information technology and a decent telecommunications link is a prerequisite for each form of eWork as defined by the EMERGENCE project, and SMEs seem to lag behind in the field of technology, we firstly hypothesise that the frequency of eWork will be lower in SMEs.

Figure 8.1 allows us to submit this hypothesis to an empirical test. On average, 48.8 per cent of European establishments already practice some kind of eWork, encompassing any work which is

Figure 8.1: eWork by Establishment size[2]



Source: EMERGENCE European Employer Survey 2000 (n =7,305). Weighted figures [3].

[1] The ENSR Enterprise Survey of 1999 revealed the following Internet penetration rates in the EU for different size categories (EC 2000, p. 180):

	No. of employees			
	0	1-9	10-49	50-249
companies with direct Internet access	33%	49%	67%	86%

[2] For all Figures presented in this report:

- X = average frequency, the (weighted) average of the three size categories
- χ^2 - levels of significance; * = $p < 0.05$, ** = $p < 0.005$, *** = $p < 0.001$

[3] The 7,305 observations have been weighted on the basis of three factors: country, sector and size. More information on the concrete weighting of the data can be found in Huws and O'Regan (2001).

carried out away from an establishment and managed from that establishment using information technology and a telecommunications link for receipt or delivery of the work (Huws and O'Regan 2000). Because the frequency of observing eWork increases with the size of an establishment and because the difference is statistically significant, the results from the EMERGENCE survey allow us to support this first hypothesis.

But how can this be reconciled with the other stream of literature, talking about a significant presence of SMEs in technology-intensive industries as well as strategic business services (OECD 2000b)? The answer to this question is to be found in the enormous heterogeneity of the companies commonly grouped together as SMEs. 'SMEs can include everything from the corner hairdresser and grocer to high technology firms. [...] So while SMEs in high tech sectors can make intense use of science-based knowledge and are active technology developers, most SMEs operate in medium to low technology environments' (OECD 2000c, p. 8). Because the majority of SMEs operate in a medium to low technology environment, the entire group of SMEs scores significantly lower than big companies in the field of eWork. When separating the small group of SMEs belonging to the so-called 'knowledge sector',[1] however, we no longer expect to find lower levels of eWork.

As can be seen in Figure 8.2, overall, establishments in the knowledge sector practice eWork more often than establishments belonging to other sectors. In line with our expectations, the picture within the knowledge sector is quite different from the general one. In contrast with the situation in other sectors, in the knowledge sector the frequency of observing eWork does not increase nicely with the size of the establishment. SMEs in the knowledge sector do not lag behind large establishments in the field of eWork practice. In fact, although the difference is not significant, we even find the highest eWork scores in the smallest establishments of the knowledge sector (54.1 per cent).

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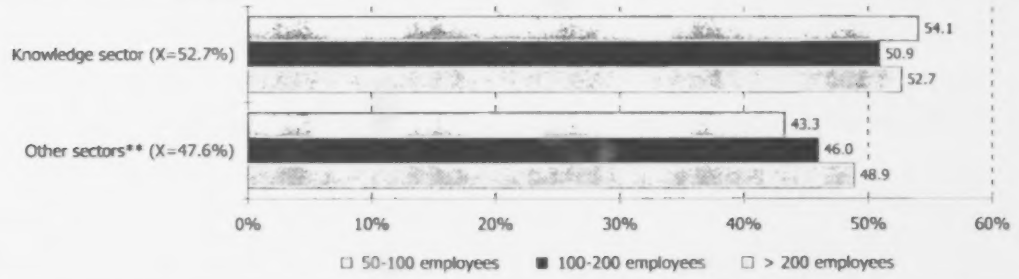
[1] The knowledge sector was defined broadly to include business services, the media, and other knowledge-intensive industries. The NACE-categories which are regarded as part of the 'knowledge sector' in the EMERGENCE project are listed in Appendix. Whilst recognising that this categorisation is by no means ideal, it was felt after much discussion and investigation to be the nearest approximation available within the existing NACE classification scheme. The sectoral composition of the 'knowledge' or 'information services' sector is further discussed in:

- Huws U, O'Regan S (2001), *eWork in Europe: Results from the EMERGENCE 18-country Survey*, IES Report 380
- Huws U (2001), *Statistical Indicators of eWork*, IES Report 358

Figure 8.2: eWork by establishment size: knowledge sector compared with other sectors



Source: EMERGENCE European Employer Survey 2000 (n =7,305). Weighted figures.

We summarise our first findings as follows:

> In general, the size of an establishment impacts on the frequency of observing eWork in a significant and straightforward way: small establishments practice eWork somewhat less often than medium-sized and markedly less than large establishments.
>
> This is all the more the case for establishments not belonging to the knowledge sector. Within the knowledge sector, the size of an establishment does not play such an important role. In other words, the group of companies commonly put under the denominator SMEs is a very heterogeneous one.

8.4 Other types of eWork in SMEs?

Two important questions have been used to categorise the different types of eWork distinguished in the EMERGENCE project. Is the work carried out by the establishment's own employees or is it outsourced? Is the work carried out by groups of workers on shared premises or by individuals acting in isolation away from 'office' premises? For each of these two dimensions, we devised and tested a hypothesis on the comparison between SMEs and large companies.

8.4.1 eOutsourcing versus eEmployees?

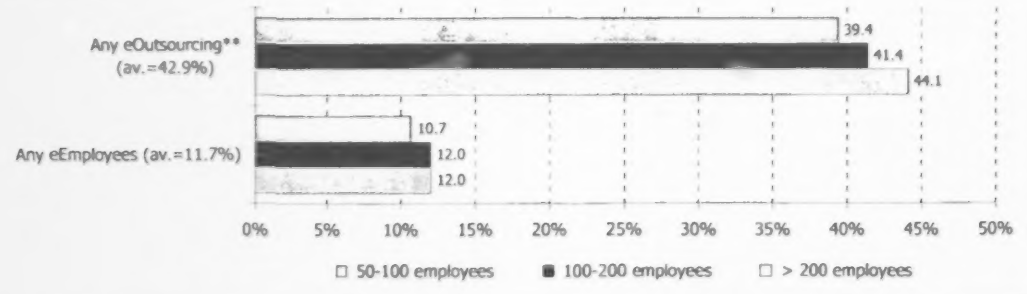
In comparison with big companies, we expect SMEs to make more use of so-called eEmployees rather than outsourcing information services based on a telecommunications link. We mainly do so because a lot of SMEs fear the loss of their independent position; they fear domination by the external service suppliers and becoming dependent on third parties who are often bigger than they are. This is in line with the results of a qualitative study of Belgian SMEs (Letouche, 1995, p. 121): 'For SMEs, outsourcing often comes down to a loss of autonomy and self-reliance; it can endanger the 'entrepreneurship' of the SME and create dependency. By relying on external parties, the identity of the SMEs becomes less controllable'. We can also refer to the results of

Schienstock *et al.* (1999a). In comparison with large companies, far more small companies answered positively to a question whether they fear dependency on external IT-suppliers.

Another reason for SMEs not to engage in outsourcing that often, be it outsourcing to companies or to freelancers, is the lack of knowledge of the market of service suppliers. SMEs often have difficulties in finding their way in a rather untransparent supply of external services. According to Letouche (1995), a lot of entrepreneurs are convinced that external suppliers only serve the needs of big companies. Furthermore, 'they consider private consultants to be 'obtrusive specialists' which are unaffordable for SMEs anyway' (*ibid.*, p. 119). Conversely, many service supply companies have difficulties in approaching SMEs, which they consider to be a rather unstructured and not very accessible world. 'Advice is being disregarded by 'obstinate entrepreneurs' who want to keep everything under control and who are not willing to invest enough in decent, specialised services' (*ibid.*, p. 119). Very often, SMEs are not the most interesting clients for specialised service suppliers and economies of scale certainly play a role in this respect. For some activities (*eg* call centre work), a critical size or scale is needed before being able to envisage outsourcing.

Because of the above-mentioned difficulties with external service provision, we hypothesise that SMEs will favour in-house eWork strategies rather than opting for an external solution, *ie* outsourcing. However, this hypothesis is not supported by our empirical data. As can be seen in Figure 8.3, in all size categories it is far more common to organise eOutsourcing rather than to work with so-called eEmployees. Small establishments too make much more use of eOutsourcing rather than eEmployees (39.4 per cent versus 10.7 per cent). A possible explanation for this observation could be the lack of internal economies of scale, motivating SMEs to outsource information activities. Small establishments, as well as establishments of any other size having information activities suitable for remote execution, might simply prefer externalisation to being saddled with the organisational implications of in-house

Figure 8.3: Use of eOutsourcing and eEmployees by establishment size



Source: EMERGENCE European Employer Survey 2000 (n =7,305). Weighted figures.

eWork. This observation of high overall levels of eOutsourcing is also in line with the idea of reduced costs of market transactions, making markets more transparent and thereby stimulating outsourcing.

Figure 8.3 also shows that the size of the establishment has a significant impact on the likelihood of eOutsourcing, but not of eEmployment. Compared to big establishments, small and medium-sized ones do not score significantly lower in the field of employing eEmployees, but they do in the field of practising eOutsourcing (as they did in the field of eWork as a whole). In other words, the arrears of SMEs in the field of practising eWork can fully be attributed to inferior eOutsourcing scores. Although in absolute terms SMEs make much more use of eOutsourcing than eEmployees, in relative terms, they are doing better in the field of internal forms of eWork. We make the following conclusion:

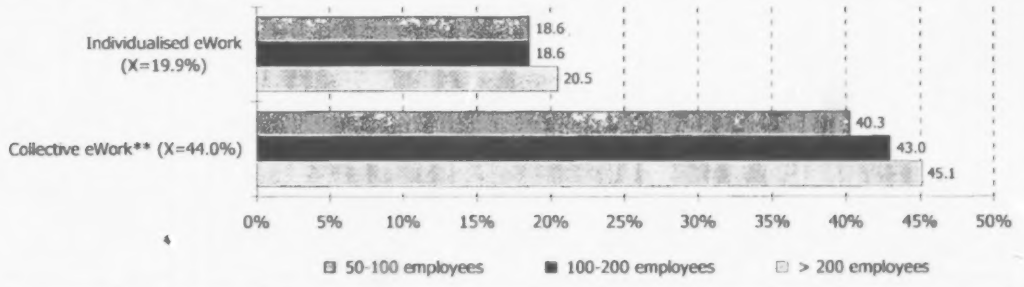
> Regardless of the size of establishments, the largest proportion of eWork involves eOutsourcing. In relative terms, though, small establishments make considerable use of in-house forms of eWork.

8.4.2 Individualised versus collective forms of eWork?

Simply for reasons of scale and size, we expect SMEs to score higher in the field of individualised rather than collective forms of eWork, for instance it is rather unrealistic for a small company to have a regional back-office or to put a significant number of employees in a telecottage – otherwise, it would not be a small company anymore. Individualised forms of eWork, such as telehomeworking or multilocational eWork, are less tied to particular minimal company size. Away from traditional office premises, these individualised eWork forms can be observed in the smallest companies. In fact, a lot of business start-up companies exploit teleworking, be it on a freelance or contract basis, as a first step. According to Selby and Wilson (2001, p10), 'sole traders and freelancers who telework often start new business activities with low overheads. Such businesses often expand to employ more workers, but there are many examples of start-ups which exploited teleworking as a first step'.

On the basis of Figure 8.4, the hypothesis of SMEs scoring higher in the field of individualised rather than collective forms of eWork has to be rejected too. Collective forms of eWork appear to be most common in all size categories under study, also in the category of small establishments (40.3 per cent versus 18.6 per cent). This might, at least partly, be explained by the fact that our 'small' establishments are still employing over 50 employees and therefore not deviating that much from medium-sized and even large establishments.

Figure 8.4: Use of individualised and eWork by type and size forms of eWork by establishment size



Source: EMERGENCE European Employer Survey 2000 (n =7,305). Weighted figures.

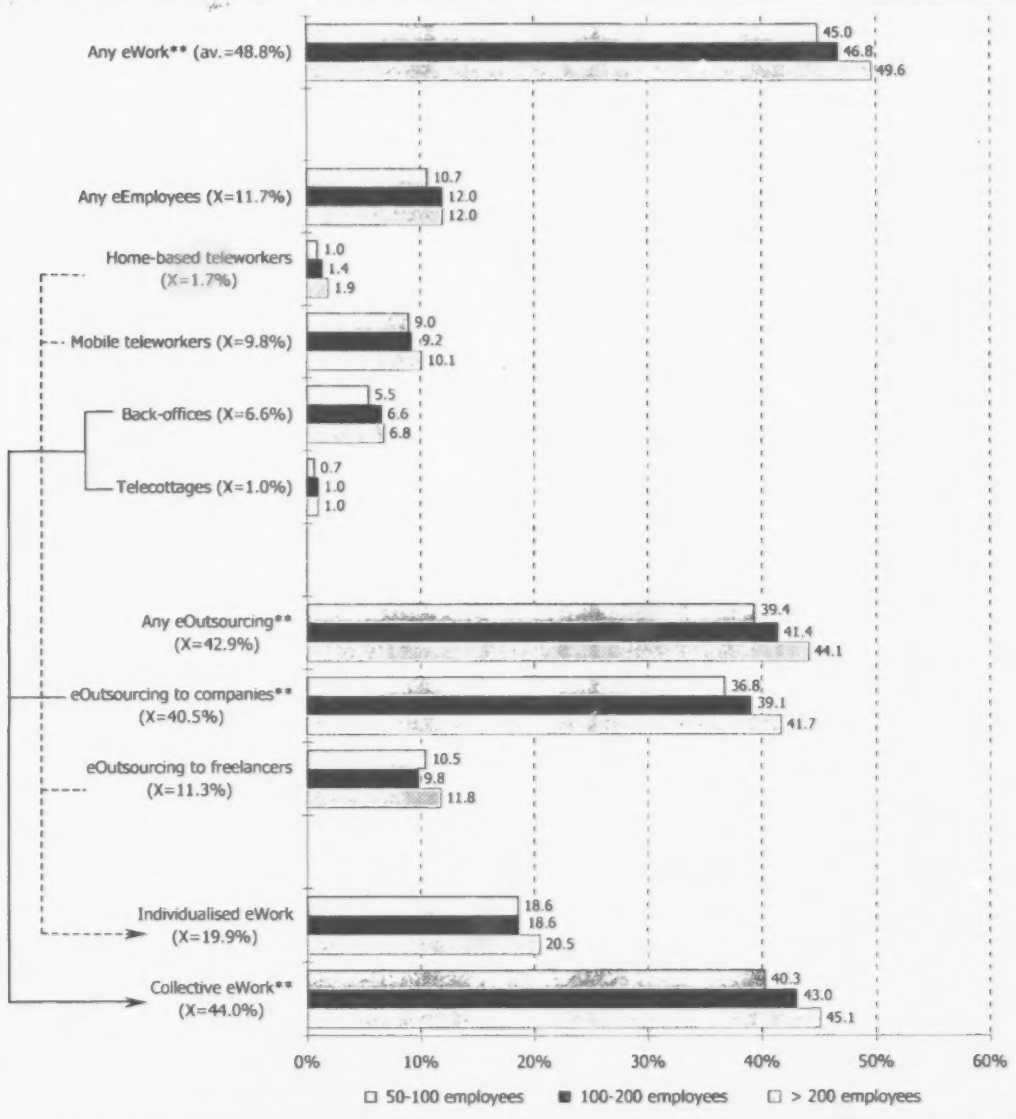
Figure 8.4 also shows that the number of employees impacts differently on the likelihood of practising individualised and collective forms of eWork. As opposed to the collective forms of eWork, establishments employing up to 200 employees do not score significantly worse in the field of individualised eWork, although it must be pointed out that the use of collective forms of eWork still outweighs the use of individual forms. Small establishments can therefore be said to be distinguished by a greater propensity to use individualised eWork. The interpretation is completely analogous to the one in the previous paragraph – the same goes for the conclusion:

> Regardless of the size of establishments, the largest proportion of eWork involves groups of workers on shared premises. In relative terms, though, small establishments make considerable use of individualised form of eWork.

8.4.3 Concrete eWork types

Based on the two dimensions discussed above, a typology of different forms of eWork has been constructed (cf. Chapter 7). Figure 8.5 compares the frequency of observing each type of eWork in the three size categories under investigation. The chart repeats the aggregate variables presented above (*eg* 'any eWork', 'any eEmployees' ...), thereby giving a full picture of eWork practices in European establishments employing over 50 employees.

Figure 8.5: eWork by type by establishment size



Source: EMERGENCE European Employer Survey 2000 (n =7,305). Weighted figures

8.5 Are SMEs important suppliers of eServices?

The data presented so far all deal with the demand side for information activities and eWork. By this we mean companies which have a clear need or demand for telemediated work for their own functioning. This demand for eWork can either be fulfilled by means of in-house solutions or by means of outsourcing. Every outsourcing relationship of course involves two parties. In this paragraph, we focus on the supply side of outsourcing relationships, *ie* companies supplying telemediated

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information activities to third party companies: their business clients.

In general, we expect SMEs to play an important role at the supply side of the trade in information activities. In other words, we expect a significant part of telemediated information activities or eServices distinguished in the EMERGENCE project, to be delivered by SMEs. Many of the most dynamic new eBusinesses have started up as very small firms and it seems likely that much of the supply of other knowledge-based products or services, ranging from multi-media content to accountancy or software services, may originate in SMEs. This general expectation is in line with mainstream literature and policy documents. According to the OECD, *eg*, 'SMEs play a key role in strategic business services, including computer software and information processing, research and development (R&D) and technical testing, marketing, business organisation and human resource development' (OECD, 2000a, p. 7). The fact that the average firm size in strategic business services is a fraction of the average size of firms in manufacturing or in the economy as a whole is an indication of the importance of SMEs in this field (see *eg* OECD 2000b; EC 2000).

The information given so far describes the key role of SMEs in supplying strategic business services, but it does not explain it. In the following, we present four mutually interrelated and reinforcing factors explaining the hypothesis about the relative dominance of SMEs in the field of eService supply.

8.5.1 Increased outsourcing of information activities and new opportunities for SMEs

Increased outsourcing not only reduces the average size of companies; it simultaneously creates new opportunities for smaller companies that, by concentrating on a few selected skills, can become the suppliers to larger companies for whom these are not core activities. But why should (bigger) companies outsource more activities than in the past, thereby creating new opportunities for SMEs? Many authors (*eg* Hagel and Singer, 2000; Schmidt, 1996; Schienstock *et al.*, 1999b *etc.*) explain this tendency by arguing that modern ICTs significantly lower the costs of market transactions, making markets more transparent and thereby stimulating outsourcing. This so-called transaction cost theory (Williamson, 1975, 1985) applies to outsourcing as such, but all the more to the outsourcing of the the seven generic business services studied by EMERGENCE (see chapter 3), simply because of the immaterial nature of these services. ICT does not only lower the cost of *eg* the information searching and accounting activities that are needed for co-ordination with external suppliers (Brynjolfsson *et al.* 1993), because of the immaterial nature it also reduces the cost of delivering the work and allows for significant remote control possibilities (see *eg* Dejonckheere and Van Hootegem, 2001a; Flecker *et al.* 2000). Because outsourcing creates new

opportunities for SMEs specialising in the supply of this work to bigger companies and because ICT makes it especially easy to outsource information activities, we expect SMEs to be particularly strong in the supply of these activities.

This expectation is more or less in line with the findings of the OECD: 'Increased outsourcing by major manufacturing firms, combined with new technologies that have allowed SMEs to win market niches, has led to ten per cent annual growth in these knowledge-based services in recent years' (OECD, 2000a, p. 7). The new opportunities for small companies in the field of supplying business services also appear from an analysis of new enterprises and start-ups in Denmark: 'If the population of new enterprises is broken down by economic activity, it is obvious that the new enterprises reflect the general development towards a service and knowledge based economy as the share of manufacturing industry is declining from nine (1990) to only six per cent of all new enterprises in 1998. On the other hand, Business Services constitutes around one-third of all new enterprises with IT Consultancy Services as the dominant single activity – growing from around 800 new enterprises in 1990 to around 1,400 in 1998' (Nielsen, 2001, p. 7). The observation that a lot of start-up companies – which we assume to be rather small – specialise in the supply of business services is not only related to increased outsourcing of these services by bigger companies, but also to the following argument.

8.5.2 Relative low costs of starting-up and exploiting an eService company

Limited financial resources are an important barrier to the start-up and further development of many SMEs. A lot of authors stress this problem in various ways. Schmidt discusses restricted access to financial credit (1996); the Observatory of European SMEs refers to difficulties in obtaining loans (because of guarantees demanded by banks, lead time to approval, *etc.*) as well as high financial costs (because of higher interest rates, unfavourable repayment conditions, *etc.*) (EC, 2000); Delmotte *et al.* (2002) further argue that the familial interests of many SMEs can hinder opening up the company capital for potential 'external' investors and this can have serious implications for the growth of SMEs; 'The most important problem that start-ups face is related to getting the necessary financing to start a business' (EC, 2000, p. 344). 'However', the authors continue, 'this problem is probably less important for enterprises in the service sector than in other sectors. These enterprises, especially knowledge-based services, do not need large assets to perform their services and therefore need mainly working capital' (*ibid.*, p. 344). The increased availability of technology at low cost is often considered to be a factor that can enhance entrepreneurship, because it permits easier access to information and lowers the cost of start-up in the case of many intangible services. Nylander and Ylöstalo (1998, p. 9), *eg*, argue

that 'global telecommunications and open technologies are lowering the entry barrier for SMEs to adopt the newest communication technology'. As the cost of information and communication technology keeps decreasing, the start-up and operating costs of many eService businesses do so as well and we expect this to enhance the potential contribution of smaller firms.

In brief, budgetary restraints form a significant barrier for many SMEs. Because this barrier seems to play a less important role for companies specialising in the supply of information services, we expect SMEs to perform relatively well in this field. Not only is a crucial 'weakness' of SMEs becoming less important in the new economy; but several important 'strengths' of SMEs are also becoming more important.

8.5.3 Developing the assets of SMEs in the supply of knowledge intensive business services

Compared to traditional services, a lot of new business services are characterised by a high degree of complexity, insecurity and knowledge intensity (Tessaring, 1998). Schienstock *et al.* (1999b) use the term 'knowledge intensive business services' when referring to activities such as design, R&D, marketing, customer service, management, *etc.* In mainstream literature, there is widespread agreement that flexibility, customisation and innovativeness have become key criteria for companies specialising in the supply of these activities (*eg* OECD, 2000c; Dejonckheere and Van Hootegem, 2001b).

Flexibility, adaptability and speed of decision-making are undeniably very important assets of small companies when compared to big, often heavily structured companies that are not able to react to a changing economic environment in such a dynamic way. To use the words of Van Kirk and Noonan (1982, p. 3): 'Small businesses clearly have the ability to strike fast, while their counterparts in big business are sometimes shackled with a bureaucracy of red tape and a painfully slow decision-making process'. Delmotte *et al.* (2002) also argue that SMEs are able to adapt themselves rapidly, flexibly and decisively to changing market circumstances and customer needs. They mainly attribute this virtue to the simple and flexible organisation structure of SMEs, which has clear advantages over the heavy structures of big companies. In addition to this, there is increasing evidence that SMEs play a key role in pioneering and developing new markets. They tend to be quicker in responding to new opportunities than large firms and this has led to a consideration of the advantages of smaller firms as a source of innovation, characterised by such features as '(i) a greater tolerance for higher risk initiatives; (ii) a collegial organisational context that values ideas and originality; (iii) a capacity to reap substantial rewards from market share in small, niche markets; (iv) improved capacity for integrating complex sets of information and technologies to create a useful

outcome; and (v) greatly increased cohesion and sense of collective purpose where all may profit directly from a successful new innovation' (Acs and Audretsch, 1996). In addition to this, innovative activity flourishes especially vigorously in environments free of bureaucratic constraints. A number of SMEs have in fact benefited from the exodus of researchers thwarted by the managerial restraints of larger firms. Larger firms also tend to promote successful researchers to management positions, while SMEs can place innovative activity at the centre of their competitive strategy (OECD 2000c).

In brief, there is widespread agreement in the mainstream literature that flexibility, creativity, innovativeness and entrepreneurial dynamism are becoming very crucial criteria for achieving economic success in the new economy and trade in new business services. Because these elements have always been important assets of SMEs, we expect them to play a particularly important role in the supply of knowledge intensive business services.

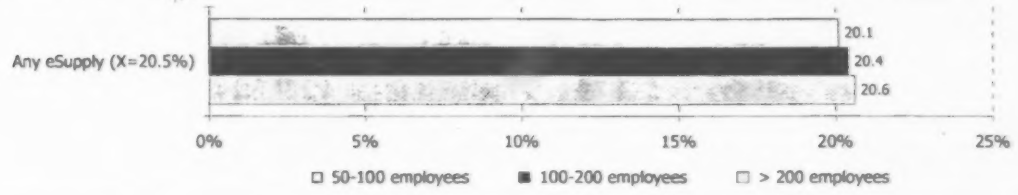
8.5.4 The virtues of networking among SMEs

Much of the literature on the new economy refers to the potential use of the Internet and networking technology among SMEs for business co-operation. According to the European Observatory for SMEs, 'co-operation among SMEs in networks based on Internet technology can open new markets. Of special interest are networks enabling small enterprises to compete jointly with larger enterprises in markets otherwise only reserved for the large enterprises' (EC, 2000, p. 174).

In the course of the nineties, co-operation between firms increased due to the rapid diffusion of modern ICT and decreasing costs of using information technology (Nylander and Ylöstalo, 1998, p. 3). By forming ICT-based collaboration networks with other SMEs, small companies can overcome typical shortcomings such as the inability to achieve economies of scale and can gain rapid access to skills, capital and knowledge (Selby and Wilson, 2001). Besides overcoming some of the weaknesses of operating in isolation, networking allows SMEs to combine the advantages of smaller scale and greater flexibility with economies of scale and scope in larger markets – regional, national and global. In more concrete terms, potential benefits of networking with other SMEs stem, for example, from 'greater access to information, the presence of concentrated and often specialised labour markets, proximity to suppliers and customers, the increased practical opportunities for mutual gains from joint marketing, technology sharing, mutual credit guarantee programmes and various other forms of inter-firm collaboration' (OECD, 2000d, p. 2-3).

In brief, ICT-based networking is considered to give a lot of new opportunities for SMEs offering eServices in the new economy.

Figure 8.6: Supply of eServices by establishment size



Source: EMERGENCE European Employer Survey 2000 (n =7,305). Weighted figures

We therefore expect SMEs to play an important role at the supply side of new business services.

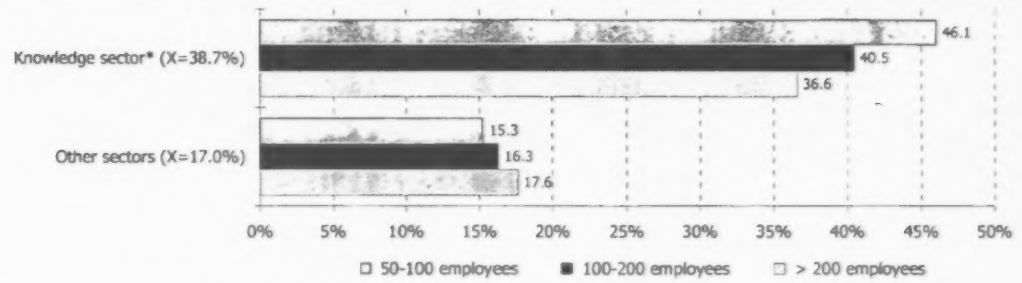
We now turn to the empirical data in order to test the hypothesis that SMEs play a crucial role at the supply side of the trade in information activities. As can be seen from Figure 8.6, in all, one European establishment in five is engaged in supplying information activities such as customer service, software development, accounting and finance, *etc.* to third party companies, using a telecommunications link to receive and transmit the work.

Figure 8.6 also shows that the size of establishments does not impact on the likelihood of supplying information-based services. As opposed to our expectations, SMEs do not score better than large establishments in the field of eSupply. On the other hand, small establishments do not score worse either. This contrasts with the demand side of information services, where we did observe lower scores for small establishments in the field of eWork and especially of eOutsourcing (*cf. supra*). Whereas small establishments have a lower demand for telemediated services being delivered by subcontractors, they do not offer these services less frequently than large establishments to third party companies.

So far, at the supply side of eWork, all SMEs have been treated as a single monolithic bloc without taking into account the enormous heterogeneity of the population of small and medium-sized enterprises. The four arguments listed above are especially valid for SMEs belonging to the so-called knowledge sector. When looking at the knowledge sector in isolation, we therefore expect SMEs to be very important suppliers of eServices, more important than big companies. The data relating to this hypothesis are presented in Figure 8.7.

Establishments in the knowledge sector clearly supply eServices more often than other establishments – the percentage of eSupply being more than twice as high (38.7 per cent versus 17.0 per cent). This is a first conclusion that can be derived from Figure 8.7. When looking at different size categories, the picture within the knowledge sector is quite different from that in other sectors. Within the knowledge sector, the frequency of observing eSupply varies inversely with the size of the establishment. For

Figure 8.7: Supply of eServices by establishment size: the knowledge sector compared with other sectors (% eSupply)



Source: EMERGENCE European Employer Survey 2000 (n =7,305). Weighted figures

establishments not belonging to the knowledge sector, this is not the case. Small establishments in the knowledge sector are three times as likely to be involved in the supply of telemediated services as their counterparts from other sectors (46.1 per cent versus 15.3 per cent).

We summarise our supply-side findings as follows:

> In general, the size of establishments does not impact significantly on the telemediated supply of information-based services; small establishments do not score better than large ones in the field of eSupply, but they do not score worse either.
>
> This contrasts strongly with the demand for eWork, where large establishments outperform small ones. Consequently, in relative terms, SMEs are more important at the supply side of the trade in information activities than at the demand side.
>
> This is all the more the case when limiting ourselves to the knowledge sector. SMEs in the knowledge sector are very important suppliers of telemediated services, more important than large establishments in the knowledge sector.

8.6 How important is establishment size?

In this chapter we have tried to assess some peculiarities of SMEs in the new economy by comparing three establishment size categories on a range of eWork and eSupply-related variables. In some instances, the number of employees did make a significant difference; but in other cases, its impact was rather limited or even completely negligible. Overall, the impact of the variable 'establishment size' was smaller than initially expected. The number of employees is clearly not the only factor impacting on the frequency of observing (different types of) eWork as well as eSupply. Bivariate analyses reveal considerable country and sector differences (Dejonckheere *et al.*, 2002). Moreover, they seem to suggest that the influence of establishment size is smaller than that of sector and country. This assumption is confirmed by

logistic regression analysis, which separates out the inter-related effects of the explanatory variables country, sector and size. Logistic regression does indeed show that the impact of establishment size on (different types of) eWork as well as on eSupply is subordinate to the impact of sector and certainly to the impact of country. Several factors might contribute to this.

First, the observation that the number of employees does not differentiate eWork and eSupply practices as much as sector and country, is likely to be influenced by that fact that very small firms have been excluded from the overall EMERGENCE survey. Supplementary surveys in very small firms will allow us to answer the question whether the finding can be generalised or not.

Second, rather than suggesting a common European model of eWork practice, the empirical data reveal a considerable degree of national and regional diversity within Europe. This is certainly not an isolated observation. Other international employer surveys, as well as the global statistical analysis conducted at the beginning of the EMERGENCE project, support the idea of regional diversity instead of regional convergence within the European information society.

A final factor refers to the enormous heterogeneity of the group of SMEs. Irrespective of the sector or economic activity, SMEs can, among others, consist of start-up companies, subsidiaries of large companies, small companies that are likely to remain SMEs for ever, rapidly growing companies that are likely to exceed the 'SME-threshold' in due course, formerly large companies that have become SMEs after downsizing or outsourcing *etc.* eWork practices are likely to differ according to the type of SME, but a lot of these differences bear the risk of being averaged out when grouping this enormous variety under a single common denominator.

8.7 eWork in microenterprises in the Irish and Danish knowledge sectors

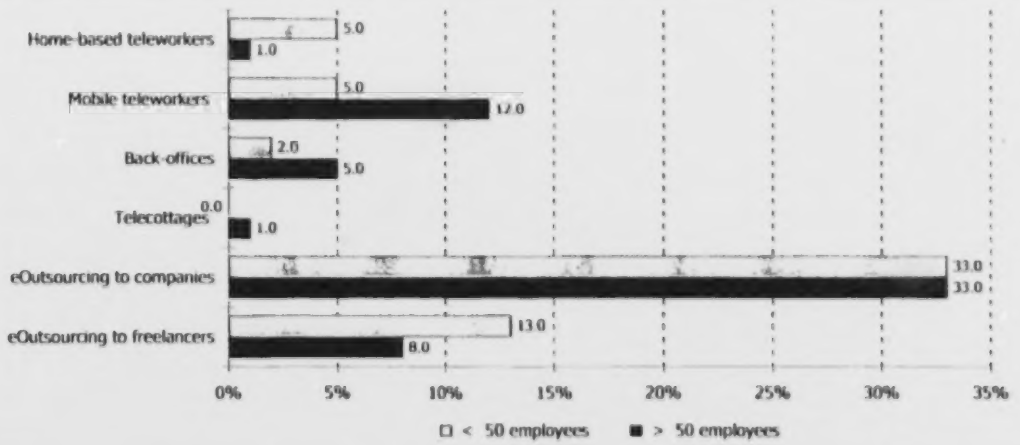
In addition to the main EMERGENCE survey, supplementary micro-firm surveys were carried out in Ireland, Denmark, Belgium and Australia producing data from establishments with fewer than 50 employees, thereby casting some light on the eWork practices in very small establishments. The following two Figures focus on the Irish and the Danish knowledge sectors and compare the eWork practices of micro-firms to establishments employing more than 50 employees. It should be noted however that great caution should be exercised in generalising from these results to other EU countries, for two reasons: the first is the relatively small sample sizes involve in these two small European countries; the second is the considerable national variation, already mentioned

in the previous section, which exists in eWork practice in Europe. These results, summarised in Figures 8.8 and 8.9, should therefore be regarded as primarily illustrative.

When looking at in-house eWork, it can be seen that knowledge establishments employing over 50 employees, be it Irish or Danish ones, are more likely to use multilocational eWork than their smaller counterparts. By contrast, the largest proportion of home-based eWorkers can be found in micro-firms. There are several possible explanations for this size-related difference: 'In some cases, the small establishments in question may be micro-enterprises run from the homes of their proprietors or by networks of homeworkers; in other cases the use of homeworkers may be an effect of the relative precariousness of small enterprises which cannot afford the extra office space or the additional equipment required to give workers a genuine choice of location. It could also be that smaller establishments lack a specialist HR officer who is aware of the advantages of multilocational working and their workers may be managed in a more ad hoc way, without formal negotiation' (Bates *et al.* 2002).

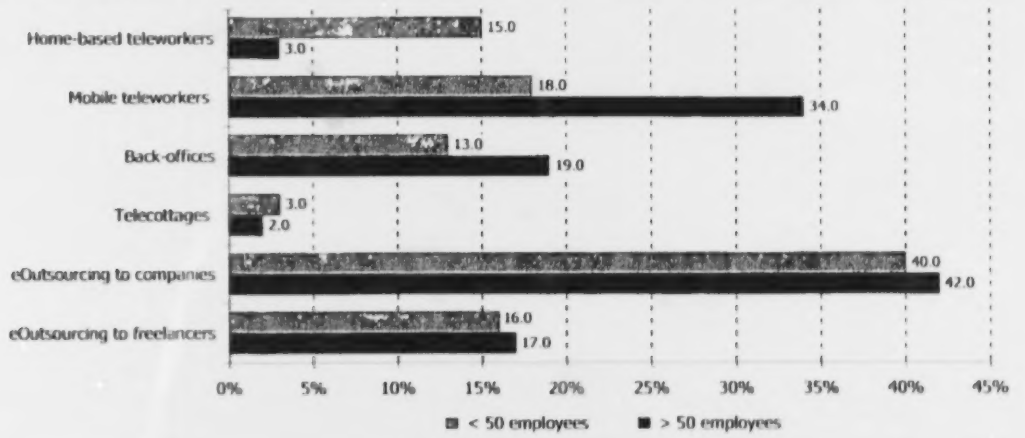
When turning to the use of remote back-offices, in both Ireland and Denmark, we see higher percentages in establishments employing over 50 employees. The use of telecottages, the other collective form of in-house eWork, is clearly negligible in Ireland. Danish establishments in the knowledge sector more often make use of telecottages. This may reflect some kind of niche marketing by telecottages or telecentres or, more likely, the typical skill patterns and technology requirements of the knowledge industries which lend themselves particularly well to remote work (Huws *et al.*, 2002).

Figure 8.8: eWork by size in the knowledge sector: the case of Ireland



Source: EMERGENCE European Employer Survey 2000 (n =7,305) + Irish micro-firm survey 2001 (n = 100). Weighted figures

Figure 8.9: eWork by size in the knowledge sector: the case of Denmark



Source: EMERGENCE European Employer Survey 2000 (n =7,305) + Irish micro-firm survey 2001 (n = 100). Weighted figures

We now turn our attention to outsourced forms of eWork. In general, small firms in the knowledge sector make considerable use of outsourcing using a telecommunications link to import business services from subcontractors. According to Bates *et al.* (2002), this might in part reflect a big need among the smallest establishments to buy in resources or expertise from external sources because they lack the scale of demand which would make it economic to have a permanent in-house solution.

In general, the number of employees does not impact on the use of outsourcing strategies as much as on the use of in-house forms of eWork. This is certainly the case for the Danish knowledge sector, where micro-firms and establishments employing over 50 employees engage in outsourcing, be it to companies or to freelancers, almost as frequently. Micro-firms in the Irish knowledge sector are more likely to eOutsource to individual freelancers than their larger counterparts. Because of the small scale of activities, the services of a freelancer might be a cheaper option or give a small firm more flexibility than calling upon the eServices of big service providing companies. The observation of micro-firms making considerable use of remote eLancers is also in line with the idea of small companies networking among each other and using Internet and networking technology for business co-operation.

8.8 Conclusions

In general, the empirical data from EMERGENCE support the idea of the knowledge sector as an important cornerstone of the new economy, characterised by a very dynamic use of eWork and trade in telemediated business services. Small knowledge establishments appear to be increasingly important, especially at the supply side eWork. Knowledge SMEs have clearly succeeded in capturing very important segments of the market in remote

business services, especially software development and support and creative work – a category that includes design, editorial work, multimedia content generation and other creative activities such as R&D.

The crucial role knowledge-intensive SMEs play in the new economy has not taken us by surprise. We expected a significant portion of eServices to be delivered by SMEs, mainly (1) because increased outsourcing of information activities is resulting in new business opportunities for SMEs specialising in these fields; (2) because of the low degree of capital intensity of many eBusinesses resulting in relatively low start-up and exploitation costs – in this way, a traditional weakness of SMEs is becoming less important in the new economy; (3) because flexibility, adaptability, speed of decision-making and innovativeness – traditional strengths of SMEs – appear to be all the more important for the supply of knowledge intensive business services; and (4) because electronic networking and clustering allows SMEs to combine the advantages of small scale with various of the benefits of large scale.

In essence, typical weaknesses of SMEs are becoming less important in the new economy, or they can be mitigated, *eg* by means of networking, whereas typical strengths can increasingly be cashed in. On the basis of our literature survey as well as the empirical results from EMERGENCE, we can therefore conclude that 'small is finally becoming beautiful'.

In fact though, it might be better to conclude that 'small *can* finally become beautiful'. The literature survey, EMERGENCE data analysis and case studies also show that the group of companies commonly categorised together as SMEs is an extremely heterogeneous one. Whereas a few SMEs indeed specialise in the supply of knowledge intensive business services, the majority still operate in a medium to low technology environment. In line with this, small establishments practice eWork less frequently than big establishments. Many SMEs might not be able to cope with the technological revolution and challenges of globalisation.

On the one hand, a considerable number of SMEs and micro-firms have succeeded in capturing important segments of the market of remote business services, thereby taking up a valuable position in the new, globalising economy. These SMEs are often considered to be the cornerstone of the knowledge economy. On the other hand, there is the simultaneous observation that many SMEs do not work their way through the electronic highway that easily. It is therefore crucially important to gain a better insight into the barriers many SMEs face to make better use of the eService patrimony. If these barriers are not adequately mapped and counteracted by policy, there is a risk of further economic polarisation in which the available government incentives benefit only a small number of economic actors.

9. The Importance of National Differences

One of the most striking results of the EMERGENCE research is the persistence of national differences in the new global division of labour in eServices. When looking at the propensity of any given establishment to practice each of the various forms of eWork, national differences systematically emerged as more important than any of the other differences. For example being based in the Netherlands made it more likely that a company would employ telehomeworkers regardless of what sector or size category that company was in. Similarly being Danish was a more important determinant of employing multilocational eWorkers than any other characteristic. The propensity to outsource was also strongly linked to certain groups of countries.

As Table 9.1 demonstrates, when multivariate methods were used to analyse the results of the 18-country survey, establishment size was only a significant factor in relation to one form (eOutsourcing to companies). Whether or not an establishment is in the 'knowledge sector' is only significant in relation to multilocational eWork and eOutsourcing to freelancers. However the country is significant in every case.

It seems to be the case that, despite the universalising tendencies of an increasingly global economy, strong nationally-determined differences still exist in the specific forms in which economies are organised. The tendencies towards global convergence include:

Table 9.1: eWork in Europe: significance of differences

	Country	Size	Knowledge Sector
Telehomework	[		
Multilocational eWork	[		]
Remote back office	[		
Telecottage	[		
eOutsourcing to companies	[	]	
eOutsourcing to eLancers	[		]
Any eWork	[	]	
Any eSupply	[		]

Source: EMERGENCE European Employer Survey 2000 (n =7,305). Analysis by HIVA

the increasingly global scope of markets; strong convergence in the regulation of employment (driven by supra-national standards set, *inter alia*, by the WTO, the ILO and – in Europe – an array of Europe-wide directives); work cultures which are increasingly shaped by the practices of large transnational corporations and the use of global languages, notably English; work practices which are increasingly determined by international quality standards; labour processes which are increasingly 'designed in' to standard software, notably Microsoft products; and the all-pervasive and insidious normative influence of global mass media representations of working life. In view of these weighty pressures to conform to international standards, the persistence of these strong national differences is indeed surprising.

Two inter-related concepts are useful for helping to understand this phenomenon. The first is that of path dependency, discussed in more detail in a later chapter of this report. The second is that of institutional shaping which is in turn embedded in the notion of varieties of capitalism (Hall and Soskice (eds), 2001). In their different ways, both of these concepts enable us to understand markets (whether these are labour markets or markets for goods and services) not as 'pure' institutions which follow universal and unchanging rules but as specific and contingent entities which are shaped by their particular historical and geographical circumstances and by the interplay between the unique character of the local institutions which have grown up in response to these circumstances and the economic and political forces at large in the external environment.

Unfortunately, the European EMERGENCE case studies did not give us any detailed qualitative evidence on how the influence of national institutions is played out in practice; nor on whether it is weakening under changing circumstances. Neither (since they do not yet exist) were we able to draw on longitudinal studies to examine whether the major trends are of convergence or divergence. However we were able to analyse the results of the employer survey in order to explore some differences in national eWork practices within Europe and test some hypotheses about possible typologies.

We drew on other literature and studies by our local research partners as well as past work by some of the EMERGENCE partners (Schienstock G *et al.*, 1999b) to develop some of these hypotheses about differing national paths to a place in the global information economy. Particularly important in this process was a version (adapted and extended by the team) of Esping-Andersen's typology of different European models of welfare regime (Esping-Andersen, 1990). Welfare regimes are relevant for the shaping of labour markets because they exert a strong influence on patterns of labour market participation.

Esping-Andersen's typology is a threefold one, in which national systems in advanced economies are characterised as 'liberal', 'social democratic' or 'corporatist'. These are differentiated firstly according to the degree of equality which exists in a given society and secondly according to the degree of 'decommodification', defined by Esping-Andersen as 'the degree to which individuals or families can uphold a socially acceptable standard of living independently of market participation'. Within Europe, the paradigmatic case of a liberal regime could be said to be the UK, whilst Sweden and German offer paradigmatic examples, respectively, of a social democratic and a 'corporatist' (or 'Bismarckian') regime.

Although they do not map precisely onto other typologies, two of these categories – the 'liberal' and the 'corporatist' can be related to Hall and Soskice's (eds, 2001) 'liberal market economy' and 'co-ordinated market economy', represented respectively by the UK and Germany. The latters' work provides us with models which explain national differences in economic character in terms of the interactions between national institutions such as training and education systems, corporate governance systems and industrial relations systems.

In critically evaluating these typologies for the purpose of grouping the eighteen countries included in the EMERGENCE European survey we found it necessary to create two additional categories covering, respectively, Southern Europe and the formerly communist regimes of Central and Eastern Europe. We also subdivided the 'corporatist' category into two. This division was mainly for pragmatic reasons – the combined populations of Germany, France, Belgium, Austria, Luxembourg and the Netherlands produced a category which was so large that, statistically speaking, it dwarfed all others. Germany and Austria were therefore separated from the others and placed in a different category. This gave us in all six categories, as follows:

1. The UK and Ireland. These two English-speaking countries are categorised by Esping-Andersen as 'liberal' and, apart from some cultural similarities and links with the rest of the Anglo Saxon world, have in common rather open economies and rather loosely regulated labour markets compared with many other parts of the EU.
2. The second category brings together several contrasts. Although France, Belgium, the Netherlands and Luxembourg are all defined by Esping-Andersen as 'corporatist' regimes (characterised by a strong social dialogue and highly regulated labour markets), there are also major differences between them. France is unique in many respects and does not fit neatly into any grouping, although it does share a common language with parts of Belgium and Luxembourg.

3. The third 'region' comprises the Nordic countries of Denmark, Sweden and Finland, characterised by Esping-Andersen as 'social democratic' regimes. These are relatively egalitarian, with strong welfare states, a high standard of living, a well-educated workforce and a high level of ICT use.

4. Our fourth category comprises Germany and Austria, also characterised as 'corporatist' by Esping-Andersen. Although united by a common language, there are differences between them, with Austria displaying some 'social democratic' features as a result of its political history, as well as having an economy which is more dependent on tourism and agriculture (introducing some resemblances to Southern Europe).

5. The fifth category discussed here is made up of four Southern European countries: Italy, Spain, Portugal and Greece. This grouping too includes some anomalies. Northern Italy and some regions of Spain (such as those surrounding Madrid and Barcelona) exhibit many of the characteristics of developed northern European regions in Esping-Andersen's 'corporatist' model. However in general these regions can be characterised as having rather weak welfare states (with a historical tendency to rely on the extended family and religious organisations to relieve poverty), strong informal economies and an above-average proportion of the population working in sectors like agriculture and tourism.

6. Our sixth 'region', comprised the Accession States of Hungary, Poland and the Czech Republic. Since 1989, these have been in rapid transition from centrally planned to market economies. These transitions have inevitably been uneven, with different institutions adapting at different speeds and with some sectors surging ahead whilst others have been left behind. This rapid pace of development has also, arguably, made it possible for organisations to escape some of the institutional inertia produced by the legacies of more gradual processes and leapfrog directly into more advanced systems unencumbered by past regulations. Such developments may be double-edged, producing new forms of economic and social polarisation and exclusion.

These groupings were created as an empirical tool to examine the national differences in eWork practices revealed by the EMERGENCE employer survey. In addition to reflecting this typology, it was also felt to be important to aggregate the national data in order to minimise the effects of small sample sizes in smaller countries, and produce a more robust analysis.

In the process, however, it was also possible to test some hypotheses relating to the usefulness of these categories for capturing such differences and beginning to explain them.

Because they are relatively unexplored in the literature, two regions, Southern Europe and Central and Eastern Europe

(categories 5 and 6 above) were singled out for special analysis, the results of which are presented separately in Chapters 10 and 11 below. In this chapter we look more generally at how the six regions compare in terms of their eWork practices and examine the extent to which this grouping reflects real differences in national practices.

9.1 eEmployment

We turn first to those forms of eWork involving employees working away from a traditional office setting. This is a form of work which, according to the research evidence, requires a considerable degree of trust (Huws U, 1996). Whilst the self-employed may be paid only when they have actually delivered the required work, employees are normally paid a regular salary based on agreed hours. Their managers are therefore unlikely to allow them to work away from base unless they regard them as mature and trustworthy enough to be self-managing.

We can hypothesise, therefore, that telehomeworking and multilocational eWork by employees are most likely to take place in national environments where there is a strong workplace culture of trust. We might further hypothesise that their presence will be linked to high penetrations of ICT and of computer literacy in the general population.

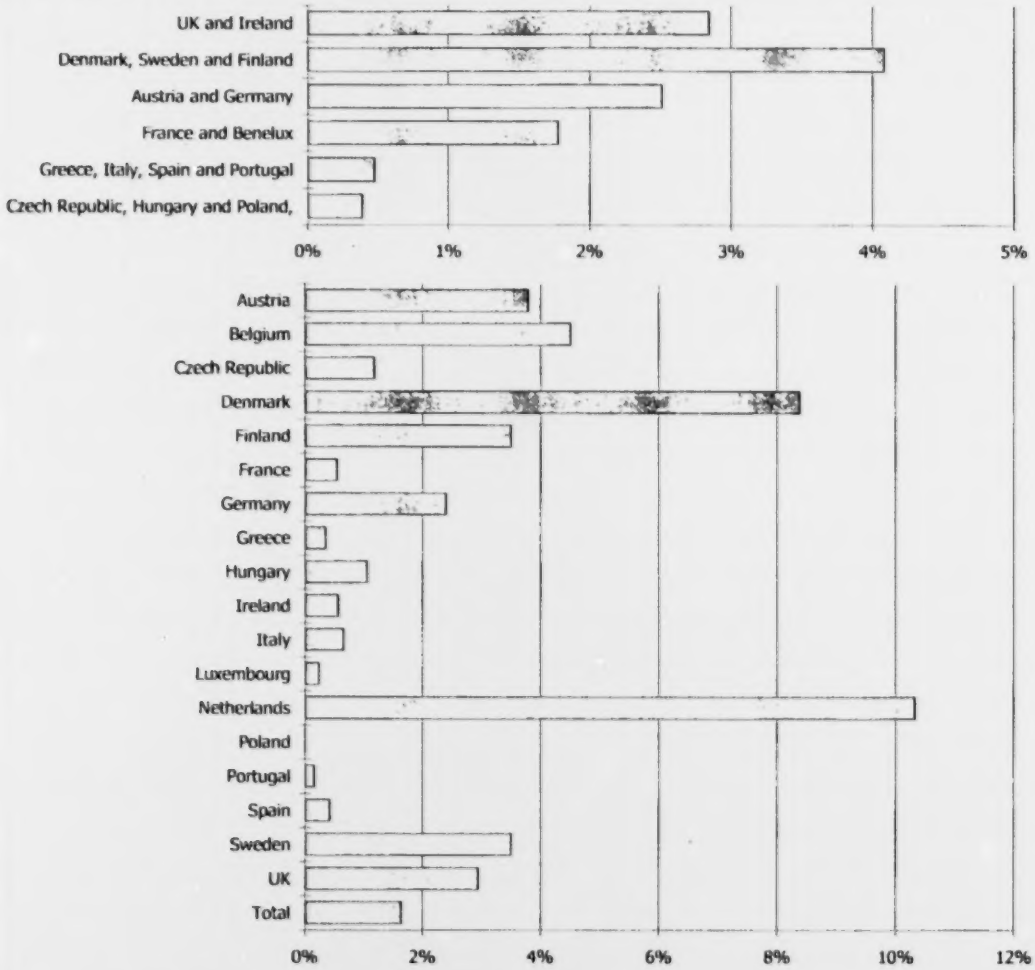
Figures 9.1 and 9.2 show respectively the distribution of telehomeworking and multilocational eWork by employees by these regional groupings.

As can be seen from Figure 9.1. telehomeworking is primarily a phenomenon of the more developed northern regions of Europe. It is highest, at over four per cent, in the Nordic countries and lowest in Central and Eastern and Southern Europe.

Within most of the groupings, we can see some minor variations: the UK, for instance, has higher levels than Ireland; Denmark than Sweden and Finland, and Austria than Germany. The most diverse grouping is the subcategory of the 'corporate' cluster which includes France, Belgium, the Netherlands and Luxembourg. Here we find an extreme contrast between the Netherlands which has by far the highest rate of telehomeworking in Europe, at over ten per cent, and Luxembourg, which has almost the lowest (though, admittedly, based on a very small sample size). Belgium scores relatively high, at over four per cent, whilst France, at less than one per cent, is low.

It is clear that, at least on this variable, this grouping exhibits major national deviations.

Figure 9.1: Telehomeworking in Europe, by region and by country

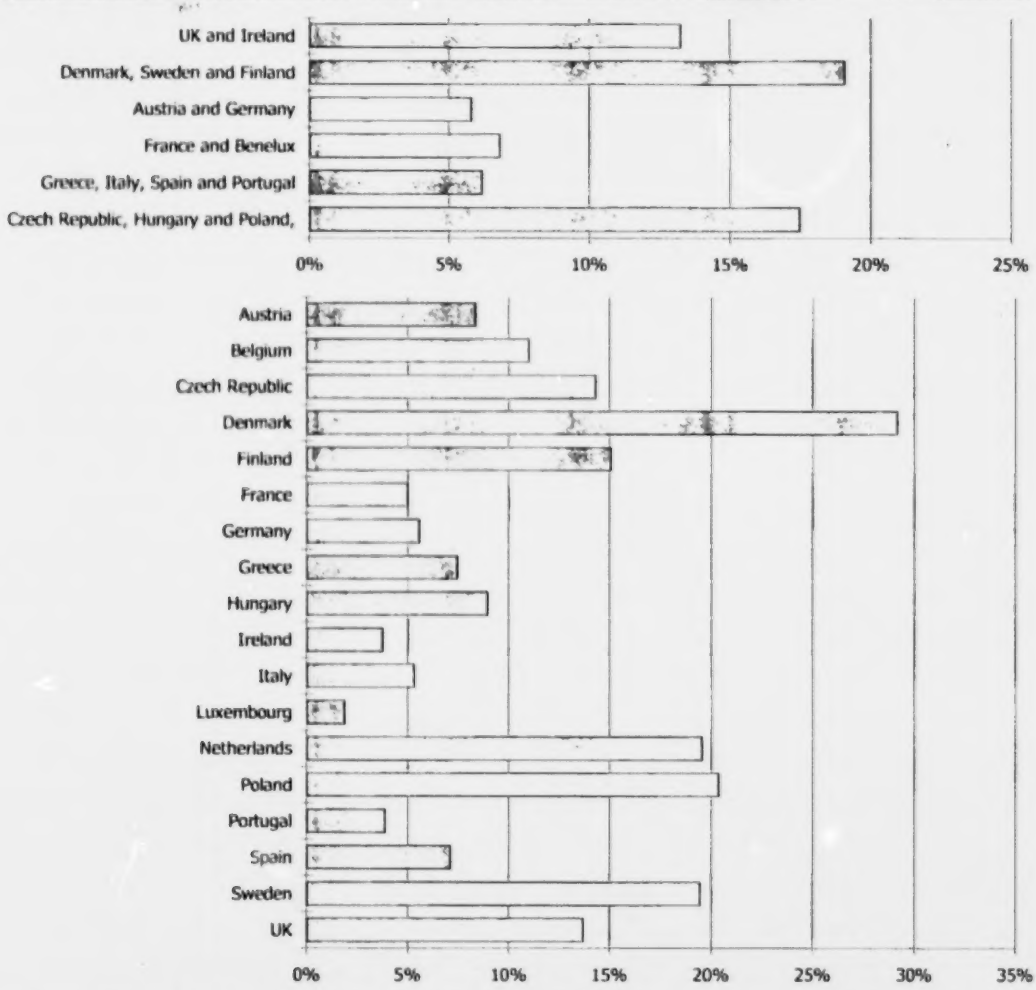


Source: EMERGENCE European Employer Survey, 2000 (IES/NOP) Weighted figures; % of establishments with >50 employees in EU (15) plus Hungary, Poland and Czech Republic. Weighted base: 7,305 cases

Turning to multilocational eWork, a much more significant type of eWork numerically speaking, we again find the Nordic countries in the lead, with some 18 per cent of establishments employing eWorkers in this way.

However here – in contrast with telehomeworking – we also find high levels in Central and Eastern Europe. Whilst we do not have a definitive explanation for this, we can surmise that it may be connected with a large number of nomadic workers, such as telecommunications or software engineers or sales representatives, employed by branches of foreign-owned companies, whose work is connected with the modernisation of these rapidly-changing economies.

Figure 9.2: Multilocational eWorking in Europe by region and country



Source: EMERGENCE European Employer Survey, 2000 (IES/NOP) Weighted figures; % of establishments with >50 employees in EU (15) plus Hungary, Poland and Czech Republic. Weighted base: 7,305 cases

As with telehomeworking, we can see that in general the 'liberal' economies of the UK and Ireland are less likely to use this form of eWork than the 'social democratic' Nordic countries, but more likely to do so than the 'corporate' ones. Once again, however, we also find that the 'corporate' category is the most diverse, with the Netherlands and, to a lesser extent, Belgium, sharing more of the characteristics of the Nordic countries with their above-average levels of eWork than of France, Germany or Luxembourg with their relatively low levels.

These results give qualified support to the rationale for our initial groupings. They reinforce our initial assumptions that eWorking by employees away from office premises is most likely to be found in the Nordic countries which have both a wide diffusion of

ICTs and a relatively strong social protection system which, because it encourages and reinforces a long-term mutual commitment by workers and employers, is likely to be associated with a culture of trust. However they raise some questions about the nature of developments in Central and Eastern Europe and demonstrate that the 'corporate' model is capable of supporting widely differing labour market developments at a national level.

9.2 eOutsourcing

Turning to home-based or multilocational forms of eWork by the self-employed (eLancing) we find a very different picture, as can be seen from Figure 9.3.

Here it is clear that the 'corporate' regimes are those which are least likely to use eLancers, at an average level of around six per cent (although here too the Netherlands bucks the trend with 18 per cent as, to a lesser extent, does Austria, with 13 per cent). More surprisingly, perhaps, given their reputation as *laissez-faires* economies in which entrepreneurship flourishes, the 'liberal' economies score relatively low here too, at nine per cent.

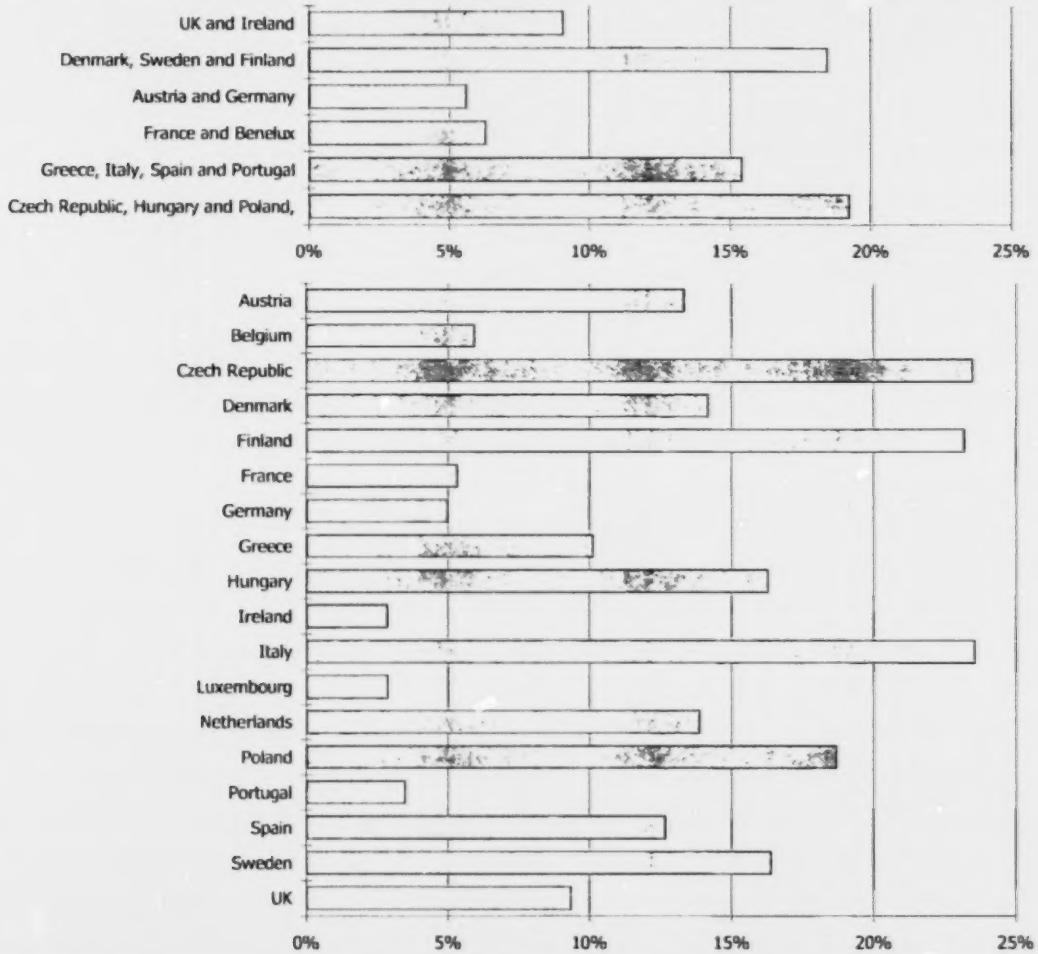
Levels of eLance use are however high both in Southern Europe, with an average of 15 per cent (concealing a peak of 23 per cent in Italy) and, even more so, in Central and Eastern Europe, at 19 per cent.

It is possible that some of these self-employed people delivering information-based services from their homes or whilst on the move are carrying out equivalent work to that of their employed counterparts in 'corporate' or 'social democratic' Northern European regimes where social protection systems are stronger, and employee status therefore more likely. However this does nor provide a full explanation.

It is not a simple question of the use of self-employment in eWork rising as the use of employees falls. The Nordic countries live up to their reputations as highly networked high-tech economies, adding to their high use of eEmployees by also making a strong use of eLancers with an average level of 18.5 per cent.

The use of eLancers can also be seen as a specific instance of more general patterns of outsourcing.

Figure 9.3: Outsourcing to eLancers in Europe by region and country



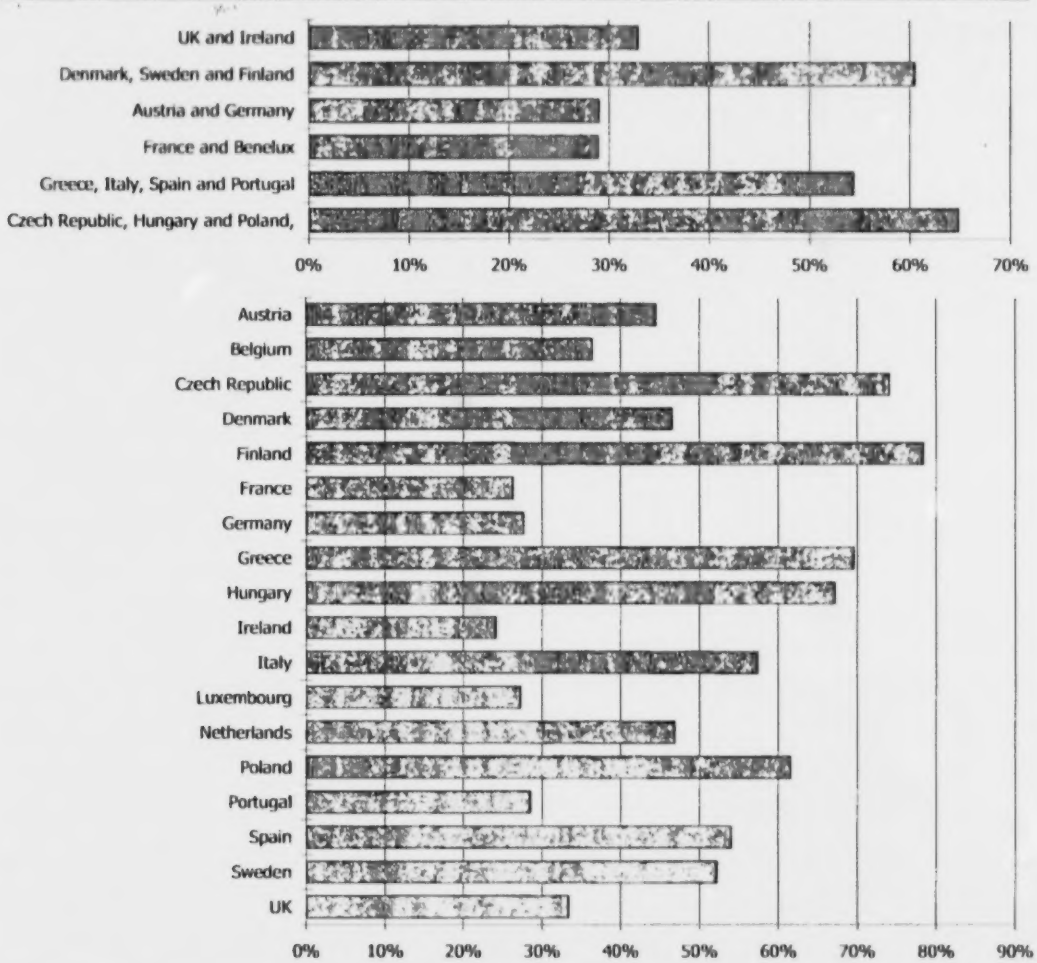
Source: EMERGENCE European Employer Survey, 2000 (IES/NOP) Weighted figures; % of establishments with >50 employees in EU (15) plus Hungary, Poland and Czech Republic. Weighted base: 7,305 cases

A more general impression of national patterns of outsourcing which can shed some light on these practices, can be gained from Figure 9.4.

This seems to demonstrate that the use of eLancers is part of a consistent pattern whereby the lowest levels of eOutsourcing are in the 'corporate regimes', followed closely by the 'liberal' ones. High levels of outsourcing are to be found in each of the other three groupings: the 'social democratic' Nordic regimes; Southern Europe; and Central and Eastern Europe.

It is likely, however, that the explanation for this above-average level of eOutsourcing is quiet different in each case.

Figure 9.4: any eOutsourcing in Europe by region and country



Source: EMERGENCE European Employer Survey, 2000 (IES/NOP) Weighted figures; % of establishments with >50 employees in EU (15) plus Hungary, Poland and Czech Republic. Weighted base: 7,305 cases

Before moving on to consider possible explanations, it is worth pausing to examine the extent to which each of the groupings is internally consistent. In fact, there is less variation within each group on this aggregated variable than when a single form of eWork is looked at in isolation. Nevertheless we still find evidence of a pattern whereby the Netherlands is higher than other 'corporate regimes'. Although lower than Sweden or Finland, levels of eOutsourcing in the Netherlands match those of Denmark. In combination with the very high Dutch score for eEmployment, this suggests that it might be more appropriate to reclassify the Netherlands with the Nordic group, rather than as part of Benelux in the 'corporate' group, where it is more traditionally supposed to belong.

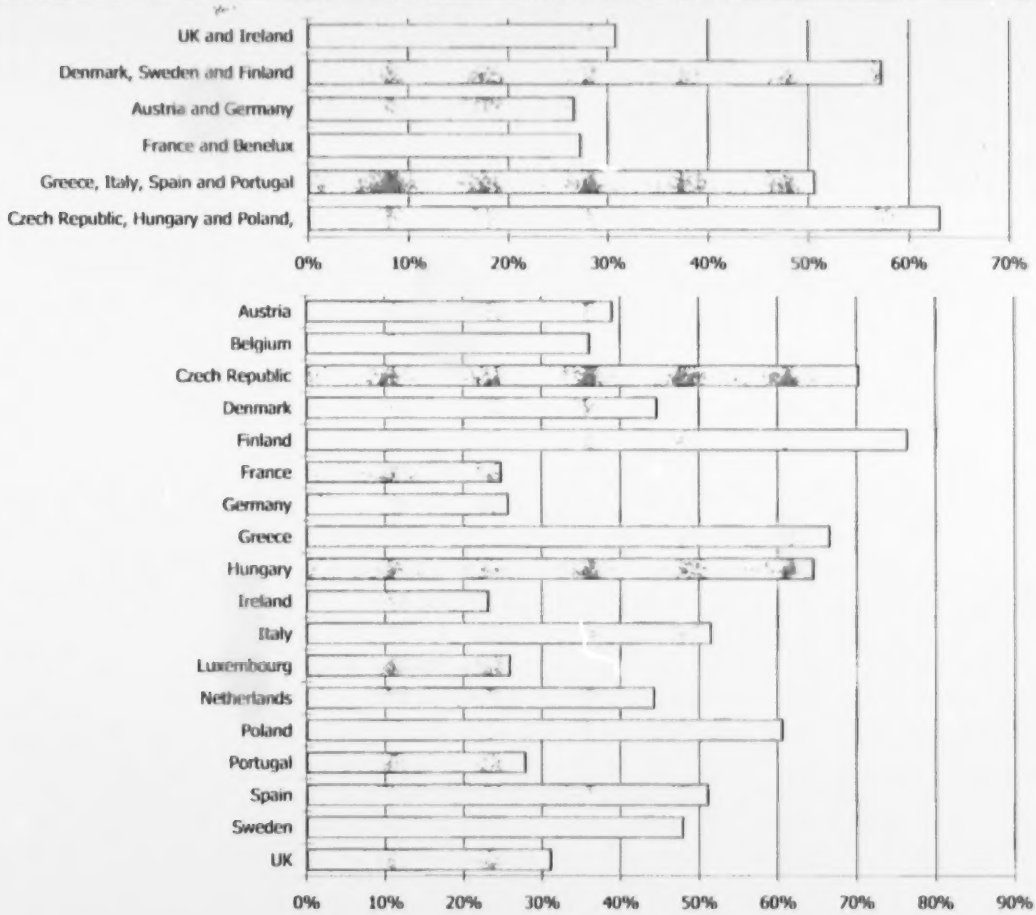
Another way of differentiating between the nations classified as 'corporate' by Esping-Andersen might be to see them – at least in terms of their eWork practices – as forming a continuum with the 'social democratic' group, with the Netherlands at the social democratic extreme, followed by Austria and Belgium, with Germany, Luxembourg and France at the opposite extreme. It is plausible to hypothesise that the large corporate economies of France and Germany exhibit some rigidities when compared with other economies which (whilst nevertheless providing more protection for their workers) act as a brake and slow down flexibilisation processes. We must emphasise, however, that the EMERGENCE results do not give us any hard proof that this is in fact the case.

In the Southern European grouping, Portugal is the outlier, with noticeably lower levels of eOutsourcing than in the Mediterranean countries of Spain, Greece and Italy. This grouping is discussed in greater detail in the next chapter, but we would point out here that the very strong informal economy in the Mediterranean countries, with a tradition of networking amongst small firms, enables us to place this pattern in a historical context in which outsourcing has always been favoured. The use of ICTS for this purpose thus represents, not a radical disjuncture with past practices, but a further development of them.

By contrast, the most likely explanation for the high levels of eOutsourcing in the Nordic countries (and possibly also the Netherlands) is somewhat different. It can be related to a high-tech economy, in which ICTs are both plentiful and cheap and a highly developed service sector. In other words it is a product of a generally high level of digitisation and use of telecommunications in the economy, compounded, at least in the case of Sweden and Finland, by a relatively scattered population and a reliance on telecommunications to link dispersed regions in poor climactic conditions (comparable in some ways to the situation in Canada). We might compare the two groupings by saying that the Nordic countries are characterised by a strong use of 'e' and the Mediterranean ones by a strong use of 'outsourcing'. In both cases, the result is manifested as a high level of 'eOutsourcing'.

Turning to the Accession States of Central and Eastern Europe, it seems likely that yet another explanation is required. Here, patterns of eWork cannot so easily be seen as the continuing development of an existing tradition, be this a tradition of being an early adopter of new technologies, as in Scandinavia, or a tradition of informal networking, as in Southern Europe. Rather it must be seen as an instrument for assisting a rapid transition from one form of economic organisation to another, whilst nevertheless being shaped by the institutional environment in which it is being adopted. This group too forms the subject of a later chapter of this report.

Figure 9.5: any eOutsourcing to companies in Europe by region



Source: EMERGENCE European Employer Survey, 2000 (IES/NOP) Weighted figures; % of establishments with >50 employees in EU (15) plus Hungary, Poland and Czech Republic. Weighted base: 7,305 cases

Given that the majority of eOutsourcing is to companies, rather than individuals, it is not surprising that this analysis is reinforced by an examination of regional patterns of eOutsourcing to companies, shown in Figure 9.5.

As can be seen, the main impact of separating this form is to bring the more extreme countries further into line with the average for their group. For instance the levels of eOutsourcing to companies in Italy are lower than those for eOutsourcing in general, because of the very high use of eLancers in the Italian context.

It should be noted in this context that the relationship between the companies on the demand and supply sides of an eOutsourcing relationship is an ambiguous one. In some cases, the bargaining power may be firmly in the hands of the company which is purchasing the eService, for instance when a large company

invites smaller ones to tender for a contract to supply a given service. In other cases, however, the power relationship may be reversed. This might arise, for instance, when a small company lacks internal expertise and buys in the services from a supplier who may have near-monopoly status in a local market, or be one of a small number of alternatives (for instance a large software supplier or a major market research company). In such cases, the terms of the subcontract may be dictated by the supplier rather than the purchaser, for instance in the form of a standard, take-it-or-leave-it maintenance contract or licensing agreement.

Whilst the EMERGENCE survey cannot supply definitive evidence on this, it seems highly likely, from other evidence, including that of the case studies, that a disproportionate number of cases of eOutsourcing in the Accession States may take the latter form. This implies that these results should not be interpreted simplistically to suggest that high levels of eOutsourcing necessarily equate with a highly developed economy or local autonomy. On the contrary, depending on the context, they could equally indicate either a state of dependency or a position of economic power.

9.3 The composite picture

Taken together, these data give us an overall picture of eWork in Europe which is summarised in Figure 9.6 (over). This shows high levels in the Nordic countries, the central and eastern European countries and Southern Europe, moderate levels in the UK and Ireland, and lower levels in the 'corporate' states.

In the light of our earlier discussions, however, it must be emphasised that this is a context in which the 'average' has very little meaning. The high levels of eWork take very different forms in each of these groups and cannot be taken as indicators of 'progress' in any simplistic sense. In some contexts they may represent weaknesses and in others strengths. In each case, it seems that eWork practices represent one among many instances of the way in which economic developments are shaped by the unique environmental and historical context in which they take place. It is clear that the potential of ICTs to delocalise work is being taken up right across Europe by a wide range of different organisations in a variety of different ways. However there is no single model of progress; each country exhibits a different path forward. Whether these paths are converging will only become apparent when further research has been carried out to compare these developments over time.

9.4 Conclusions

Whilst it is clear that the typology of European nations presented at the beginning of this chapter does not provide a perfect fit

Figure 9.6: any eWork in Europe by region and country

Source: EMERGENCE European Employer Survey, 2000 (IES/NOP) Weighted figures; % of establishments with >50 employees in EU (15) plus Hungary, Poland and Czech Republic. Weighted base: 7,305 cases

when mapped onto the differing patterns of eWork practice revealed by the EMERGENCE employer survey, it does appear to correspond to a considerable extent with discernible differences.

In general, the countries which appear to fit least well into the typology are the Netherlands (which shares many features with Sweden, Denmark and Finland) and to a lesser extent Belgium and Austria which diverge from their larger neighbours in Germany and France.

Portugal too is something of an outlier, exhibiting consistently lower levels of most forms of eWork than other Southern European countries.

We can summarise our conclusions as follows.

The UK and Ireland are grouped together by Esping-Andersen, along with the rest of the Anglo-Saxon world, as neo-liberal systems, characterised by low levels of labour market regulation, rather low employer investment in training and a 'hire and fire' culture in the face of market changes. In such economies, eWork is more likely to be used to encourage external forms of flexibilisation, such as the hiring or temporary or agency staff and the use of freelancers, than for internal restructuring. The trust-based forms of eWork using permanent employees which are found so frequently in the Netherlands and Nordic countries are somewhat rarer in these countries. Perhaps because they are islands and crossing borders is therefore physically more difficult, the levels of eOutsourcing outside national borders are at or slightly below European averages too. Despite the common language, these countries are significantly different both from each other and from Australia, another Anglo Saxon country which was studied by EMERGENCE, where in some ways the pattern of eWork appears closer to that of Scandinavia, with high levels of eEmployment and relatively low levels of eOutsourcing.

In a second group, we can classify some high-tech, highly developed economies, most of which fall within Esping-Andersen's category of 'social democratic' states. These include the Nordic countries of Denmark, Sweden and Finland and also the Netherlands, although this has some distinctive features which are in some ways closer to more traditionally 'corporatist' states. These countries are marked by high levels of individualised eWork by employees, perhaps indicative of strong consensensual patterns of collective bargaining and high levels of mutual trust in the work culture.

A third group constitutes Esping-Andersen's 'corporatist' group, with a strong 'social dialogue' between the employers and the trade unions, but marked by more hierarchical occupation-based welfare systems, with entitlement to services being more closely linked to the terms of centrally negotiated collective agreements and employment status and less likely than in the Scandinavian countries to be offered unconditionally to all citizens. Most of the countries in this group (which includes Germany, Austria, France, Luxembourg and Belgium) are characterised by rather low levels of individual eWork, although Belgium, and to a lesser extent Austria, appears as something of a hybrid (more like the Netherlands) with somewhat higher levels. Italy too, or at least the more industrialised North of Italy where many high-tech industries are based, shares some of the features of this corporatist model. There is a strong emphasis in these states on the development of formal skills and the retention of staff and the use of ICTs in these economies seems primarily adopted to enable organisations to become better adapted to change by encouraging internal forms of flexibility (such as multi-skilling and flexible shiftworking).

Perhaps the most distinctive divergences are to be found in two groups of countries which do not figure in Esping-Andersen's threefold typology. These are the countries which border the Mediterranean Sea in Southern Europe (Spain, Italy and Greece) and the formerly communist Central and Eastern European countries which are now in the process of joining the EU.

Italy, Spain and Greece are very different from each other in many respects, and also from Portugal which shares some of their characteristics. Nevertheless, they can be seen to have several features in common. One of these has been a historically rather slow but now very rapidly-developing use of information and communications technologies which has followed a distinctively different path from Northern Europe. These countries have traditionally been characterised by a large informal economy and strong networks of small firms. They are characterised by an extremely high use of eOutsourcing, both to small firms and to individual 'eLancers', but most of this is within national borders rather than internationally, and it seems likely that eWork is being adopted by firms in these countries to exploit technical specialisation. There is thus a highly developed functional division of labour in eServices which are traded between companies and individuals; however these trading networks are still fairly contained geographically, involving, one might surmise, considerable face-to-face or telephone communication to be fully effective. Being even more speculative, we can hypothesise that the typical transactions are those between firms in an established market where the balance of power between suppliers and purchasers is fairly equal.

The final group of countries (the Czech Republic, Hungary and Poland) also have extremely high levels of eOutsourcing. In this case, however, a very high proportion of this outsourcing is outside national borders. Furthermore, the use of eWork is not distributed evenly throughout the economy but concentrated in certain sectors (especially business and financial services) and size categories (the largest firms, many of which are foreign owned). Here, there appears to be a direct link between high rates of eWork and high rates of Foreign Direct Investment. It seems likely that these high levels of eWork have a very different explanation from those in Southern Europe. On the one hand, it is undoubtedly the case that these states have become attractive sites for relatively low-cost high-skill business services, such as software development and that these Central and Eastern European countries are exporting eServices to the rest of Europe and elsewhere in the world. It is also the case, however, that in the rapidly-changing environment of these transitional economies there are strong historical reasons why specialist skills are lacking in many organisations, particularly organisations which date back to the 1980s or earlier. In such cases it is necessary to import external expertise. There are thus good reasons why these countries score highly on both the supply and demand sides of the

market in eServices . However this is not necessarily an indication of market strength. Further investigation will be necessary to determine how favourable the terms of these contracts are and how likely they are to lead to balanced and sustainable economic development in the countries concerned.

If such differences are to be found within one continent, it is clear that those elsewhere must be even greater. Considerably more research will be required before we can gain an understanding of the specific positions of other countries, at different stages of development, in the new global eEconomy.

10. eWork in Southern Europe

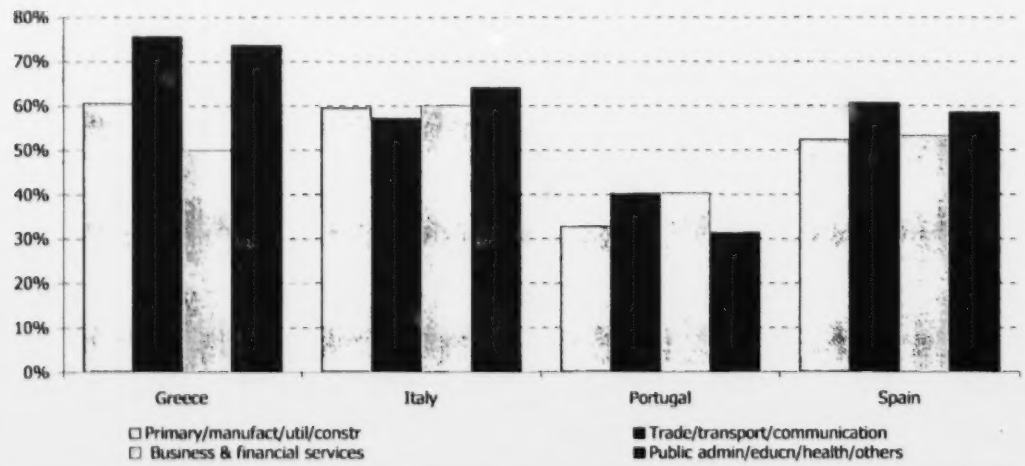
10.1 Introduction

We saw in the last chapter that overall levels of eWork in Greece, Spain and Italy were rather high, but that they were substantially lower in Portugal.

It is clear that a high proportion of organisations in the Mediterranean have seized the opportunity to use eWork for at least one function.

In Figure 10.1, we compare the use of eWork by sector, contrasting the primary, manufacturing and construction sectors (here

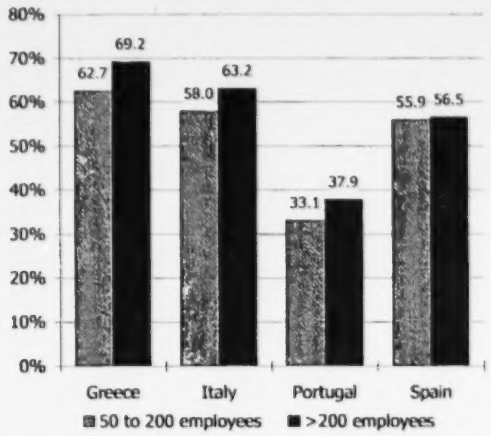
Figure 10.1: Comparative analysis of the presence of eWork in macro sectors[1]



Source: EMERGENCE database

[1] *note:* some of the figures in this chapter may deviate slightly from those quoted in the previous chapter because they are based on unweighted rather than weighted data. The purpose of weighting is to iron out discrepancies caused by under or over sampling in countries or sectors which would otherwise run the risk of being under (or over) represented. Since the analysis in this chapter is broken down by sector and country such weighting is not necessary.

Figure 10.2: Diffusion of eWork by company size



Source: EMERGENCE database

described as 'industry') with the service sectors. As can be seen, an analysis of the presence of eWork by sector does not indicate specific behavioural differences between industry and the three macro service divisions. Even though there is a greater diffusion of the tertiary sector in all countries, comparing the average of the three service aggregates with that of industry, it emerges that the differential is substantial only in Greece (61 per cent industry; 72 per cent services). For the other country systems, the gap does not exceed four percentage points.

Figure 10.2 shows a breakdown of eWork prevalence by company size. Here, all four countries show a similar picture with a higher prevalence, albeit slight, in the use of eWork in companies with over 200 employees. The differential is around one per cent for Spanish companies, increasing to between five and seven per cent for the other Southern European countries.

It must be emphasised here, that these results refer only to larger establishments, those with fifty or more employees. This is especially significant in Southern Europe where the vast majority of firms have fewer than 50 employees, with a very heavy concentration in sectors which are unlikely to use eWork (such as agriculture, tourism and small-scale manufacture).

From this evidence, and before carrying out further analysis, we present some interpretation of these results by geographic area and sector.

Firstly, it can be ascertained that technological obstacles to the fruition of this new form of work in these Mediterranean countries do not seem to exist. To be precise, as substantiated by the figures – including the lowest ones in Portugal – there seems to be an

ICT standard already in place that guarantees Mediterranean countries accessibility to remote working arrangements.

High diffusion levels may be due to the quest for organisational improvement. In a systematic representation of an economic environment, eWork undoubtedly represents a strategic opportunity for rationalisation, integration and specialisation of networked units. This is especially the case in highly fragmentary economic systems where organisation is predominately based on micro and small operational units. This hypothesis enables us to interpret the widespread presence of eWork in the Mediterranean as evidence of some degree of homogeneity within these economies. More specifically, it can perhaps be attributed to the lack of a mature Fordist economic organisation, albeit with very different internal factorial advantages.

Lastly, another interesting element that emerges from our analysis is the balanced presence of eWork in all sectors, with slight differences in the manufacturing division. A possible interpretation could be that the increasing immaterial component in process and product manufacturing has made this innovation in work organisation, operating through electronic transfer, a particularly interesting opportunity even for industrial companies. Another factor is the increasing importance of strategic business functions (which we describe in more detail below) in which traditional manufacturing companies often lack internal expertise or experience. The need to seek an external source of supply for these functions creates the conditions for a continuing growth in the demand for eWork.

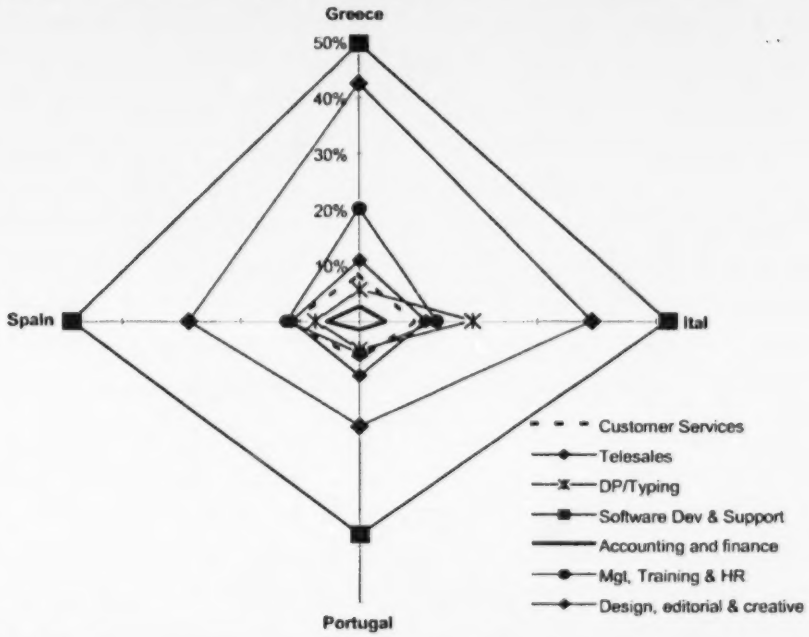
10.2 The functions involved in eWork

The EMERGENCE survey collected information on eWork, classified under seven different generic business service functions (see Chapter 3). Figure 10.3 presents an analysis of the data, broken down by these functions, to allow a comparative interpretation by geographical area and function.

This figure clearly demonstrates a substantial homogeneity between countries in the graduation of functions conducted through eWork. With the exception of some overlap in services where eWork is less widespread, a pattern is repeated that places software and creative services (design, editorial activities, multimedia work and other creative activities) functions at the top, relegating the other five functions to a frequency rate of below ten per cent.

The comparison becomes even more interesting if we examine these functions in relation to the frequency with which they are conducted as eWork.

Figure 10.3: E-work use by function (% of function in E-Work out of total company cases where there is the selected function)



Source: EMERGENCE database

Adopting this interpretation key, great similarities between all the countries emerge, especially in the customer services, telesales and accounting functions. More precisely, the marginality of the function of financial and accounting services is clearly demonstrated. In the four areas, the activity of accounting, although present in almost all companies, plays a marginal role in eWork, with the vast majority of establishments preferring to keep the function in-house or outsourced through traditional means. Companies' policies in relation to customer services and telesales are also similar. For all countries, the percentage of establishments reporting that they organise sales and customer assistance functions through a 'remote' modality is just under ten per cent.

Nevertheless, there are some divergences between countries. As Figure 10.3 reveals, these can be noted in relation to data entry and typing, human resource management and training, creative activities and software services.

In programming and IT support, where there are peak rates in eWork for all countries, Portugal demonstrates a frequency of 38 per cent compared with approximately 50 per cent for the other three Mediterranean countries.

Just as important are the differences in 'creative activities'. In this function, which occupies second place in eWork practice, Italy and

Greece display results of 40 per cent, Spain 29 per cent and Portugal 19 per cent.

Other differences include a much higher rate of eWork in Italy for data processing and typing (at 20 per cent, compared with an intensity of approximately six per cent for the other countries) and a relatively high incidence of eWork in HR management and training in Greece (at 20 per cent compared with 13 per cent in Italy and Spain and six per cent in Portugal).

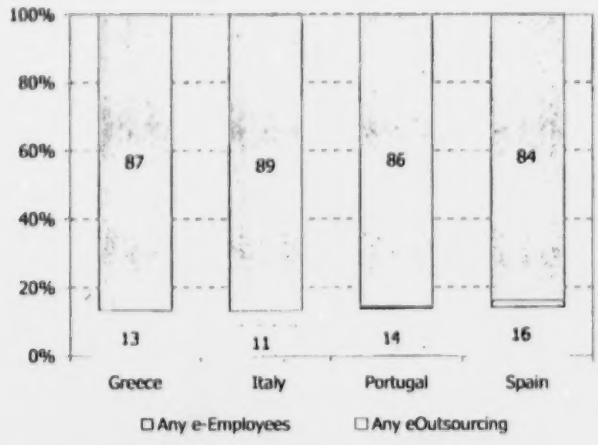
10.3 In-house vs outsourcing solutions in eWork

As demonstrated in Figure 10.4, in Southern Europe, eWork is almost always used on an outsourced basis. In each of the four southern European countries, more than four-fifths of eWork involves the subcontracting of telemediated business services to external companies.

In the light of this result, it can be easily ascertained that the role played by the telemediated organisation of work in a company's operational infrastructure is as an instrument to assist in the acquisition of factorial advantages supplied by subjects external to the company.

With this role, and in the context of market globalisation and overcoming of Fordist organisation, eWork can act as a strategic lever to improve the competitive position of companies. The need to adapt to complex and changeable market requirements makes flexible production more effective when it is organised in independent business units linked by the use of information technology. It is to be expected that the growth in complexity of the network due to increases in the number of activities involved

Figure 10.4: Internal and outsourced eWork (100= Total eWork)



Source: EMERGENCE database

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in outsourcing and an extension of the geography of supply, should be followed by an intensification of relations through the practice of eWork.

10.4 The decision to outsource business services: cost reduction and quality improvement

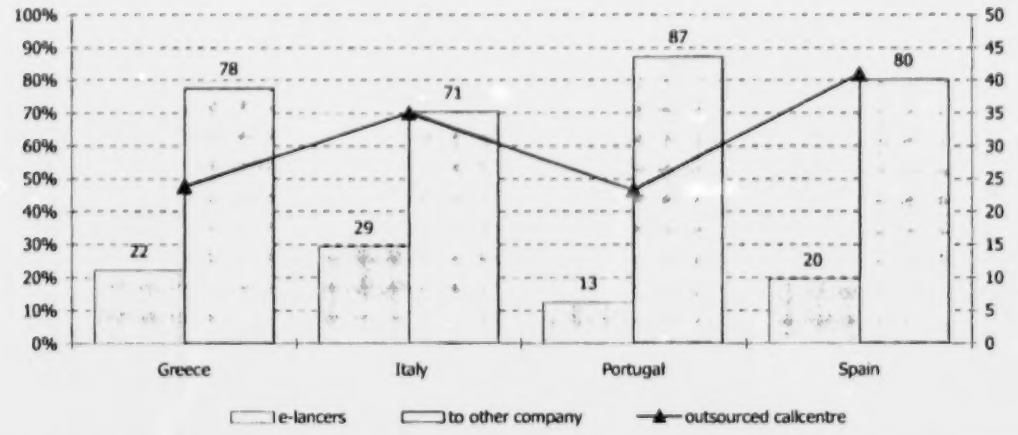
If eWork is to be recognised as an operational lever in a general strategy for the outsourcing of some phases of the production process, it is interesting to examine some of the options open to an organisation.

Firstly, as demonstrated in Figure 10.5, most outsourcing is to companies rather than individual freelancers. Outsourcing to individuals varies, from a maximum diffusion of 29 per cent in Italy, to 20 per cent in Spain and Greece, and 13 per cent in Portugal. There is thus a clear preference for companies, especially for call centre based operations. In particular, in Italy and Spain, around half the outsourced business services involve call centres.

Another strong characteristic of eOutsourcing in these countries relates to its relatively narrow geographical scope. Even in a phase of accelerated international relations, only a small number of companies go beyond their national borders for the outsourcing of their services. In all the Mediterranean regions, for over 60 per cent of cases, there are factorial conditions (cost advantages, service quality, organisational opportunities) sufficient to justify eOutsourcing in the same city or region where the contractor company is located; whilst over 90 per cent of eOutsourcing takes place within the same country.

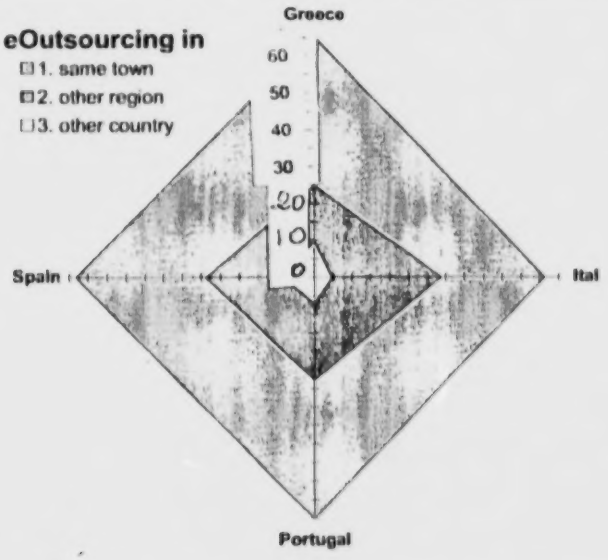
It is evident that operating mostly in an adjacent geographical

Figure 10.5: Framework of e-outsourcing



Source: EMERGENCE database

Figure 10.6: Territorial framework of e-outsourcing (index base = 100)



Data source: EMERGENCE database

area, contractor companies do not resort to eOutsourcing because of the more favourable cost structures to be obtained in other local economies nor to take advantage of logistic opportunities.

As illustrated by Figure 10.6, there are very few cases in which establishments have strayed far from home in their search for a supplier. This type of behaviour is even apparent in Italy and Spain, although with slight differences. This is surprising given that both countries are characterised by regional differences in costs, where the evident cost advantages to be found in the less developed regions would justify alternative choices.

By analysing this behaviour, it is possible to outline an hypothesis of eOutsourcing that can be traced back to an objective of process organisation – the selection of production units whose size and specialisation offers better results for service quality and quick adaptability to markets. The fact that technical and service quality factors are often used to justify eWork confirms this hypothesis.

Again, looking at Figure 10.7 it can be ascertained that technical/ qualitative aspects predominate among the reasons given to justify the choice to eOutsource. Even though there are no national differences that can be interpreted as evidence of dissimilar strategic behaviour, the frequency varies from a minimum of 44 per cent in Portugal, to 50 per cent in Greece and 55 per cent in Italy, reaching a peak of 65 per cent in Spain.

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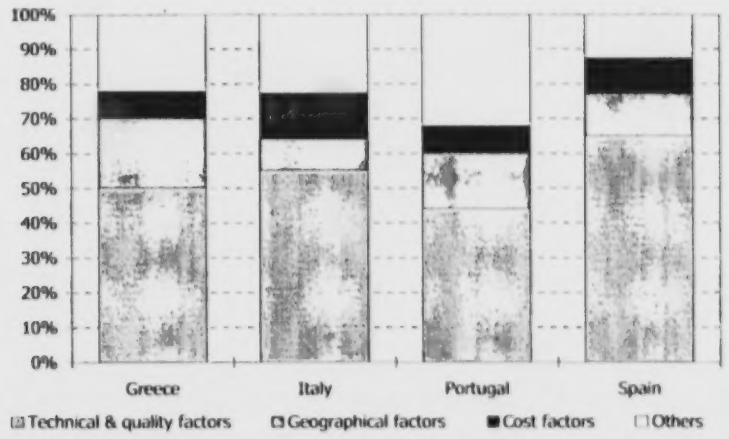
Figure 10.7: Reasons for eWork in outsourcing



Data source: EMERGENCE database

10.5 Conclusions

We can conclude that the patterns of eWork found in Southern Europe provide evidence of a highly distinctive style of economic development and adoption of ICTS which differs significantly from that in other parts of Europe, in some cases exhibiting a leapfrog development enabling small networks of firms to behave in a more agile and adaptive fashion than their counterparts in Northern Europe.

eWork appears to be, above all, used as an instrument of flexible specialisation amongst networked organisations within a relatively autonomous national economy. The absence of micro-businesses in our sample makes it difficult to generalise to the economy as a whole, being based on a sample of larger organisations, skewed to the demand side of the market in business services. Further research will be required to determine whether some of these micro-businesses may be excluded from the development of a digital networked economy.

It will also be necessary to determine by further research whether these – largely national – patterns will remain sustainable in an increasingly globalised economy.

11. eWork in Central and Eastern Europe

11.1 Introduction

We noted in Chapter 9 that eWork practices in the Accession States of Hungary, Poland and the Czech Republic appeared, from the results of our European employer survey, to exhibit a characteristic pattern which contrasted in many respects with those in other regions of Europe.

In this chapter we explore these results further, in the context of an extensive review of other existing literature and evidence, in order to discover how eWork practices can be regarded as models of transformation, combining both system-specific and generic changes in the Central and Eastern European context.

The mainstream view among economists and political scientists – those observing and advising the transition process from planned to market economy of the formerly state-socialist countries of Central and Eastern Europe – has been to regard the change as from one type of political-economic regime to another, ignoring any institutional continuity.

The 'transition' is interpreted as an once-and-for-all shift from a political-economic regime based on the logic of central planning to another regime based on the logic of the market. This approach is often characterised by the zero sum game model of society, according to which the triumph of one social-economic system implies the complete failure of the other. The societal developments seem to follow the rationality of revolution: without the complete destruction of the old institutions it is almost impossible to create genuinely new institutions of the market economy. This view of transition is related to a variety of other concepts. First, the legacy of the socialist past represents institutional deficiency and limits the speed of diffusion of the market-economy institutions or slows down the transformation process. Secondly, it overestimates the level of institutional coherence or homogeneity of the former socio-economic regimes and neglects the diversity of regulations governing both individual and collective actions (Makó and Simonyi, 1992, pp. 36-41).

Another, more balanced view – but less popular both in the academic community and among the new political and economic

actors – refutes the 'institutional vacuum' argument of the transformation.[1] This approach recognises the role of path-dependence in the emerging new market institutions (*eg* privatisation, creating autonomous labour relations system, governance structures of the firms, implementing leading-edge management practices, *etc.*), the core importance of which is to better understand the variety of development trajectories in the post-socialist economies in the CEE region. As a representative of evolutionary development noted; 'Path-dependent emergence of a new, post-socialist form of capitalism calls for a complex evolutionary interpretation of this great transformation, as opposed to the 'big bang' view, as the metaphor itself suggests, which forgot something historical was there before' (Chavance, 1995, p 288).

One of the most important lessons learnt from more than a decade of experiences of institutional changes in the post-socialist economies in the CEE region is the necessity to use the evolutionary interpretation of the socio-economic changes as opposed to the 'big-bang' or 'instant capitalism' views. The other lesson is that the development of post-socialist firms and management has been uneven. In this respect we have to note that it is not only privatisation itself that is important, but also the filters through which it is experienced by the social actors (owners, managers, state, workers and their interest representation organisations).

On evaluating the impacts of transferring managerial skills and organisations, it is worth drawing attention to the risk of the mechanical and 'undersocialised' interpretation of the 'transfer'. To understand the learning of new values and new patterns of behaviour of both local and foreign managers and employees, it is necessary to treat organisational learning not only as interactive but also as multi-dimensional. Distinction should be made between 'technical-professional' versus 'social-cultural' and 'formal-explicit' versus 'tacit or hidden' forms.

Finally, the tempo of the transformation process itself is also different in the three Central European countries surveyed. In addition to the undeniable dependence on past experiences ('path dependency') the new model-creator roles of such economic actors as foreign owned firms, especially the norm-setting role of

---

[1] By using the term 'transition' instead of 'transformation', we intend to refute the view of 'turnkey' capitalism in the post-socialist economies in the CEE region, as this view underestimates the importance of *time for the social learning process* in creating market economy institutions in these countries. The ideas of 'turnkey' or 'instant' capitalism view the future of the post-socialist countries as '... shaped by images of Western Europe's and North America's present ... and this basically teleological development concept of changes anticipates future society which is not only desirable, but already known' (Grabher, 1995, p. 33).

green-field investments of multinational corporations (MNCs) should also be mentioned (Makó, 1997, p. 119). According to our experiences, green-field sites function as accelerators of the diffusion of leading-edge concepts and practices. To understand the impact of Foreign Direct Investments (FDI) – a key component of the multidimensional process of globalisation – it is worth noting the heavy presence of foreign affiliates both in manufacturing and in the service sectors.[1]

11.2 The roles of institutions in transferring organisational practices in the context of globalisation

Changes related to the transformation from state-planned to market economy are often called 'system specific' in contrast to the 'generic' changes like globalisation or the development of the e-economy, *etc.* On analysing and assessing the impacts of 'generic' changes, we would like to stress the important filtering role of the 'system specific' changes interpreted in an evolutionary perspective. To make the socialised or embedded'character of the generic business functions better understood, we have to make a distinction between 'macro-' and 'micro-institutional' patterns. The mainstream literature emphasises a strong convergence of the institutional patterns in the process of globalisation, whether they are of business or cultural or cultural–ideological in character (Ritzer, 1993).

There is a new trend in literature carrying various labels, like 'societal approach' or the 'French regulation school', whose representatives differentiate between micro- and macro-institutional patterns of society (such as *eg* the labour relations systems, education, legal and financial system) which transform or change in the long run or in a historical perspective only. In this

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[1] According to the 2001 report of the OECD dealing with the knowledge economy, 'The share of turnover under foreign control in the manufacturing sector ranges from about 70 per cent in Hungary and Ireland to under 2 per cent in Japan. The share of foreign affiliates in manufacturing employment ranges from around 50 per cent in Ireland, Luxembourg, and Hungary to 1 per cent in Japan. ... The share of turnover under foreign control in the service sector is relatively high, at over 20 per cent, for Hungary, Belgium, Ireland and Italy. In terms of employment, the share of foreign affiliates ranges from 19 per cent in Belgium and around 14 per cent in Hungary and Ireland to less than 1 per cent in Japan ... In terms of employment, penetration of foreign affiliates seems evenly distributed between services and manufacturing in Belgium, Finland, Portugal and the Czech Republic. The largest imbalances are in Hungary and Luxembourg.' (OECD (2001), *Science, Technology and Industry Scoreboard: Towards a Knowledge-Based Economy*, Paris: OECD Publications, pp. 102-104).

context, the 'path-dependent' model of institutional development has strong relevance (Grabher and Stark, 1997; Zysman, 1994). Namely, the forces of globalisation are absorbed or mediated by these macro-patterns of institutions, and the various trajectories or paths of economic development are actually their outcomes. As Hage, one of one followers of the 'societal approach' puts it:

> *'What makes these systems macro is that they apply to the entire society and typically have been institutionalised for long time periods. A very common element is that there are multiple organisations involved, in which a variety of complex social roles are enacted. In contrast, simple micro-institutional patterns ... represent relatively simple patterns or norms and/or laws, involving few actors with relatively simple and frequently repetitive social roles, and these patterns have been relatively recent ... Simple institutional patterns such as ... quality work circles may diffuse throughout the advanced industrialised countries but complex patterns will not.'*
>
> (Hage, 2000, p. 213)

Similar conclusions were drawn from an empirical study of the service (hotel) sector on the diffusion and dominance of the 'hardware' (organising principles) and in an indirect way even of the 'software' (HRM) of the American model of internationalisation, which were transferred and maintained relatively easily in hotels belonging to various national owners (Nickson and Warhurst, 2001, p. 225).

Here, we focus on the analysis of outsourcing business services. Business services belong to the category of the micro-institutional patterns of society and economy, playing an important role in transferring knowledge and organisational patterns in the post-socialist CEE countries. According to our hypothesis, homogeneity or heterogeneity in the practices of outsourcing can function as an indicator of the development trajectories of business organisations in these countries.

11.3 Lessons from the EMERGENCE project: visible differences in outsourced business functions

We have already presented, in earlier chapters of this report, several of the distinctive features of the results of the EMERGENCE survey in relation to CEE countries. However it is worth commenting here on a major difference between these Accession States and the rest of the EU in relation to the establishment size dimension.

On comparing the size of the companies surveyed by region, attention must be drawn to the extremely radical changes in organisational morphology in the ex-socialist counties. Until the late 1980s, in sharp contrast to the EU, especially Southern Europe, large organisations were dominant, while in the 1990s already micro and small firms represented the largest share in business organisations in these countries.

There are however significant differences among the three NAS in the size-structure of their establishments. In the case of firms with less than 50 employees, it is important to make a distinction between 'micro' and 'small' firms. In Hungary, for instance, a great majority of business organisations (96.4 per cent) now belong to the category of 'micro' firms, as in Italy or the Czech Republic (83.8 per cent), whereas in Poland their share is only 8 per cent. The combined category of 'micro' and 'small' firms represents the overwhelming majority of the firms in the CEE region: Czech Republic 96.56 per cent, Hungary 99.3 per cent and Poland 71 per cent.

It is unfortunate that, for budgetary reasons, this important segment of business establishments is missing from the EMERGENCE employer survey.

11.3.1 Comparison between CEE and the EU

Supplementary analysis of data from the EMERGENCE employer survey was carried out in order to address the question: is it possible to identify differences among the EU countries and especially among the CEE countries of the EMERGENCE Project in their regional economic development and their economic competitiveness by means of measuring the practices of the various business functions? In other words, is it possible to make statistically supported conclusions about the relationship between the practice of outsourcing and the indicators of economic development of the regions surveyed?

The questionnaire used in the 18-country employer survey measured both the demand (the establishment practises the function) and the supply (the establishment offers the function) sides of the market in eServices. In this part of our analysis we focus exclusively on the demand side for the following reason: it is obvious that the establishments surveyed may generate demand for business services almost independently of the type of their activity, while on the supply side only the business services limited to the activity of the establishment are present. Also from a methodological point of view it is more challenging to concentrate on the demand side of the business services market or functions, as for example, a software development company may generate a demand for all seven of the generic services we identified, while on the supply side it is only present in the 'software development, maintenance and support' market. The demand side thus throws greater light on the characteristics of regional economic development in Central and Eastern Europe through the relations between 'in house' versus 'outsourced' practices of general business services.

The extent to which establishments practice any of the seven generic business services used as the basis for the survey is shaped by their economic context, or the institutional heritage of

the way that economic activities have historically been organised in these states. The organisational morphology of the former state-socialist system was characterised by the dominance of large state-owned firms, which – due to their large size – practised all generic business functions plus social functions internally (Hirschhausen, 1995, p. 54-76). Following the collapse of the state-socialist political and economic system, the former large state-owned firms were transformed – through various schemes of privatisation – into small and medium sized enterprises (SMEs). Interestingly, as a part of the organisational–cultural heritage, the new owners and managers in the SME sector continued to follow the organisational routines they were used to.

If we want to understand the present organisation of general business services in the CEE economies, we have to interpret it in a historical context, as this approach is essential in interpreting the employer survey data. At the same time, the SME sector in the EU (15) countries is functioning in a matured capitalist environment and establishments are practising only such functions or services as are consistent with their size. In other words, SMEs in the EU(15) members states have more developed links (networks) and also exchange resources and information more intensively to develop more appropriate solutions to cope with challenges in the new economy.

These findings support the idea of using the so-called path-dependency argument in interpreting the development of such micro-institutional patterns as generic business services in the NAS (3). Integrating the dimension of time into our analysis, we may suppose that these differences in organising work will gradually disappear and practices in the NAS will approach those in the EU.

A comparison of business functions within the group of NAS (3) shows that the ratio of business services of Hungarian establishments is rather more similar to the EU (15) average than to the other two candidate countries'. Differences in micro-institutional patterns such as generic business services are consistent with the macro-economic indicators in the CEE region.

We now turn to the way of practising these generic business functions. Theoretically, in both private and public organisations, any kind of business services can be practised in three ways:

1. in-house
2. outsourced
3. in a combination of (1) and (2).

In the first case, the business function is carried out within the organisation by persons with an employment contract. In the second case, the establishment is buying services from another person (*eg* a freelancer or e-lancer) or organisation (specialist

business suppliers) (see Figure 3.1). These two cases are rather clear and well known in more than 200 years history of outsourcing.[1] The third option of outsourcing covers a multi-dimensional phenomenon in which some elements of the business function are practised 'in-house', while some others are 'outsourced'. This may involve the use of eLancers who work multilocationally, sometimes on the employer's premises and sometimes elsewhere.

There is considerable casual use of self-employed assistance in most CEE states, sometimes as a device to avoid the legal obligations imposed on employers. The mutually exclusive categories used in the EMERGENCE employer survey (designed, of necessity, to enable quantification and international comparison) offer a rather simplified picture of a complex and dynamic reality. In company practice, the organisation of business service related activities is often fairly complicated. For instance, all accounting tasks may be outsourced and carried out by a financial service supplier, but some tasks are carried out on the customer firm's premises, while others are conducted on the premises of the financial service supplier. Or, in other case, all accounting related tasks are carried out by the customer firm's own employees but in the rented office of a financial supplier firm, using its infrastructure and know-how. The distinction between spatial separation and legal separation designed into the survey is therefore an important one, but not always so easy to disentangle in practice.

We analysed the survey data broken down into these three categories using the same six European regional groupings as in Chapter 10. The results enabled us to identify statistically significant patterns which are summarised in Table 11.1.

The data presented in this table show us how many of the seven generic business functions or services are on average practised 'in-house', 'outsourced' or 'combined' in the establishments surveyed, according to the four analytical categories. It should be noted that this table covers all cases of outsourcing, not just those which are 'telemediated' or 'e-linked'. This analysis shows visible – significant – differences among the regions surveyed in the study, which result is also supported by the variance analyses of

---

[1] Adam Smith wrote more than 200 years ago: 'the maxim of every prudent master is never to attempt to make at home what it will cost him more than to buy.' In the nineteenth century, before the advent of the big integrated rim, outsourcing was the norm. Firms were small or loosely co-ordinated, labour supply was plentiful, and product markets fragmented and relatively stable: circumstances which allowed outsourcing to flourish.' (Reilly P, Tamkin P (1996), *Outsourcing: a Flexible Option for the Future?*, IES Report 320, p. 1.

Table 11.1: Average number of business functions by regions

Dimensions	Major forms of practising business functions 'In-house' (a)	'Outsourced' (b)	(a) + (b)
II. EU regions			
(A) UK/Ireland	4.08	0.29	0.42
(B) Denmark/Finland/ Sweden	3.58	0.23	1.07
(C) Austria/Germany	4.24	0.21	0.35
(D) Benelux countries/France	3.43	0.14	0.58
(E) Greece/Italy/Spain	3.64	0.40	0.81
(F) Czech Republic, Hungary, Poland	3.64	0.60	0.84
III. EU (15) versus NAS (3)			
EU (15) countries	3.75***	0.26	0.65
NAS (3) countries	3.64***	0.60	0.84
IV. Differences within NAS (3) in comparison with EU (15) average			
EU (15) average	3.75	0.26	0.65
Czech Republic	4.14	0.64	0.96
Hungary	3.19	0.66	0.70
Poland	3.83	0.49	0.94
Average	3.74	0.30	0.67

sig<0.001 *** sig=0.051

Source: EMERGENCE European Employer Survey, 2000 (IES/NOP); percentage of establishments with >50 employees in EU (15) countries plus Czech Republic, Hungary and Poland. Weighted base: 7,305

the variables.[1] (Based on the results of the dispersion analysis, we have to note that the regional differences are significant.)

We now look at the differences within the group of NAS (3) countries. On comparison a strong heterogeneity can be identified: Hungarian establishments have the lowest ratio of business services in-house (3.19), the highest ratio of outsourcing (0.66) and the lowest ratio of outsourcing within the organisation (0.70). These data support our hypothesis on the relationship between the manner of outsourcing and the level of economic development. It seems therefore that the Hungarian service provider sector is somewhat stronger and more capable of carrying out functions in-house than its Czech or Polish counterparts. The outsourced business functions kept within the customer premises is thus the lowest in Hungary in the group of NAS (3) countries.

[1] Annex 1 provides information on the details of the variance analysis.

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If we also include the number of business functions practised into our analysis, further weight is given to this hypothesis: the average number of business functions practised by the EU (15) countries' firms is 4.6, while in the Czech case it is 5.7 in the Polish one 5.2 and in the Hungarian case 4.5, which is closest to the EU (15) country's average.

E-outsourcing is different from the traditional form of outsourcing, since in this case the business service supplier's work is enabled by ICT. Establishments may delocalise their activities in a variety of locations where they may organise the business functions in different ways. We regard an establishment as belonging to the category of 'e-outsourcer' if it uses ICT at least one premises, while an employer who does not use any ICT links on its premises is classified as a 'traditional outsourcer'. (In the EMERGENCE employer survey, 'e-outsourcing' covered business services supplied with ICT support.)

Table 11.2 compares eOutsourcing in the three NAS with the EU and exhibits some strong contrasts.

If we take the 'traditional' functions of sales, data entry (or typing) and accountancy, we find little difference between the two regional groupings.

However the functions which could be said to be those most centrally involved in the modernisation process in transitional economies show very dramatic differences.

The first of these is software development, which is, as we have already noted in Chapter 4, the function most likely to be involved in eWork, and especially eOutsourcing. In the EU, nearly a quarter of establishments (24.1 per cent) outsource this function. In the Accession states, however, this proportion leaps to four in ten (42.7 per cent on average).

The second area where modern capitalist practices differ markedly from those traditionally practised in these states is

Table 11.2: eOutsourcing: EU (15) versus NAS (3) (firms which outsourced at least one business function with the help of ICT) (%)

EU/NAS	Customer Services	Sales	Data	Soft	Account	HRM	Create
EU15	2.7	1.3	3.5	24.1	2.7	5.2	14.4
NAS 3	9.4	3.4	2.6	42.7	2.2	16.4	31.2
Czech Republic	6.6	3.5	2.7	43.2	5.2	19.4	49.3
Hungary	3.7	2.6	3.8	47.1	5.3	17.5	33.0
Poland	11.6	3.6	2.3	41.5	0.6	15.2	25.5
Total	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Source: EMERGENCE European Employer Survey, 2000 (IES/NOP); percentage of establishments with >50 employees in EU (15) countries plus Czech Republic, Hungary and Poland. Weighted base: 7,305 cases

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Human Resources Management and consultancy. Here too, levels of outsourcing are much higher in the Accession States, at an average of 16.4 per cent, compared with only 5.2 per cent in the EU.

This suggests a considerable need to acquire external expertise in these countries. This high level is also consistent with the above-average levels of foreign ownership in these transitional economies. It is likely that in many cases, external expertise in management and technology comes as part of the FDI package.

A similar pattern can be found with creative functions (where 31.2 per cent of NAS establishments use external suppliers, compared with 14.4 in the EU). Here, whilst there is some outsourcing overseas, the pattern can partially be explained by in-country outsourcing to small firms and eLancers.

We also find that levels of outsourcing of customer services functions are significantly higher in the NAS than the EU, at an average of 9.4 per cent, compared with only 2.7 per cent across the EU. This is mainly caused by exceptionally high levels in Poland (at 11.6 per cent) and is also consistent with an economy dominated – at least amongst larger firms – by branches of foreign firms.

11.4 Conclusions

Based on the empirical data of the EMERGENCE 18-country survey, this chapter has analysed the diffusion of eWork in the Central and Eastern European countries. First, the authors presented some theoretical models (*eg* institutional vacuum, path-dependency) that help in understanding the nature of the political and economic system-specific changes in the emerging market economies. Particular attention was paid to the tools of transferring eWork in the newly associated states (NAS) participating in the project's employer survey. Macro and micro institutional patterns were distinguished and their interaction was also examined.

Following the theoretical and methodological introduction, the paper compared the EU (15) and NAS (3) in relation to their patterns of using business services.

Outsourcing in general is a more popular practice in the NAS (3) than in the EU (15) countries. These differences implicitly indicate an unequal degree of institutional maturity of the SME sector in the CEE region. Outsourcing is at its highest in precisely those functions most closely associated with the modernisation of business practices, both in technological and in management terms, and with the dominance of foreign ownership.

We can conclude that the Accession States of Central and Eastern Europe do indeed exhibit patterns of eWork practice which are markedly different from those elsewhere in the EU. Some of these are connected with a relative lack of internal expertise and a need to buy in external services from abroad as part of the effort to 'catch up' with mainstream European practices as organisations shake off the practices of their socialist pattern, lose their organisational autonomy and adapt to new markets. Others may well offer the germs of new organisational forms, as these states manoeuvre for position on the supply side of the new global division of labour in eServices.

It is debatable whether these new phenomena represent weaknesses or strengths in the dynamic economic environment of the early 21st century and the transition to full EU membership.

An undue dependence on externally owned companies both as suppliers and as markets for their products could be construed as a weakness; however a strong embeddedness in global supply chains could equally be regarded as a strength.

Similarly, the lack of in-house experience of commercial business practices could be regarded as a weakness because it forces reliance on external expertise; it could, however also be regarded as offering freedom from the inertia resulting from reliance on outdated legacy systems and bureaucratic practices.

Further research will be required to establish the balance between these factors, and which sectors, regions and groups on the labour market in Central and Eastern Europe will emerge as winners as a result of these processes and which risk being the losers.

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Executive Summary

Introduction

This is the final report of EMERGENCE, a three-year research project, funded under the European Commission's IST (Information Society Technologies) Programme and involving a research collaboration between partners in the UK, Austria, Belgium Denmark, Hungary, Italy and Sweden, plus research subcontractors in France, Germany, Spain, Poland and the Czech Republic, as well as non-European partners in Australia and Canada.

A wide range of dissemination materials, including an interrogable database, a regional development toolkit, newsletters, downloadable reports, presentations and conference papers can be found on the project's website at www.emergence.nu. This report summarises the main research findings from the project. In particular, it draws on:

- a review of the existing evidence on eWork at a global level
- an 18-country survey of employers' practices in relation to the use of remote ICT-supported work for carrying out core business service functions
- a modelling exercise relating the results of this survey to existing statistics on individualised forms of eWork in Europe in order to model and forecast eWork trends
- 62 case studies of eWork relocation
- additional analysis of these research results to pull out their implications for small firms, for Southern Europe and for the Accession States of Central and Eastern Europe.

For the purposes of the EMERGENCE project, eWork is defined broadly, as work carried out at a distance from an establishment whether by employees or on an outsourced basis. Forms of eWork were also subdivided according to whether they were 'individualised' (*ie* involving individuals working in relative isolation away from traditional office premises) or 'collective' (*ie* involving groups of workers working together in remote office-type premises, whether these premises were owned by the employer, by a subcontracter or by some third party, *eg* a telecottage). The main conclusions of the report are as follows.

Extent of eWork

Nearly half of all establishments with 50 or more employees in Europe (49 per cent) are already practising some form of eWork. The largest proportion of this eWork involves outsourcing, although nearly 12 per cent of all establishments use forms of eWorking involving direct employees.

Here, it is interesting to note that the stereotypical employee eWorker based solely at home is in fact one of the least popular forms of eWork. Only one and a half per cent of establishments in Europe (EU 15 + 3) employ people to work exclusively from home in this way, although the proportion rises to over two per cent in the EU (15). It is much more common to use the new technologies to support multilocational eWorking by employees, a form of working much less likely to be associated with social isolation, which is practised by approximately one European employer in ten.

Turning to eWork carried out by employees on office premises, we find that employers are already making significant use of information and communications technologies to carry work out remotely. One European employer in fourteen (6.8 per cent) has a back office in another region. Bearing in mind that the 'regions' we are talking about here are large – NUTS1 level – regions, which, in the case of smaller countries like Ireland, Portugal or Luxembourg, constitute the whole country, this represents a significant displacement of work.

Less than one per cent of establishments make use of telecottages, telecentres or other remote office premises owned by third parties as workplaces for their remote employees.

These forms of in-house eWorking are heavily outweighed by the use of eOutsourcing as a mechanism for carrying work out remotely. Over half of all establishments (56 per cent) outsource at least one business service involving information processing. Restricting our definition only to those which use electronic means of delivery ('eOutsourcers') we find 43 per cent of employers making use of this practice. Much of this eOutsourcing is carried out within the region where the employer is based (34.5 per cent) but substantial numbers (18.3 per cent) outsource to other regions within the same country, whilst 5.3 per cent outsource outside their national borders.

Outsourced forms of eWorking may involve contracts with individual freelancers or with companies. Nearly one employer in six (17.3 per cent) uses freelancers to deliver some form of information service. However, not all of these use information and communications technologies for the receipt or delivery of work. When the definition is tightened to include only telemediated freelance work (*ie* work involving delivery over a telecommunications link), we find that 11.4 per cent of European

employers are using 'eLancers', a proportion which is roughly equivalent to those using home-based or multilocational eWorking employees.

Modelling individualised forms of eWork in Europe

Combining the results of this survey with estimates derived from European labour force surveys produces an estimate that in 2000, there were some 9.04 million people in the EU working at least some of the time away from traditional office locations using ICTs to deliver work to employers or clients.

Of these, the largest single group, estimated at 3.7 million, were 'multilocational eWorkers' – employees who were either working partially from their homes and partially from their employers' premises, or working nomadically from other locations, such as clients' premises. Only an estimated 810,000 were employees working wholly from their homes. Of the remainder, some 1.45 million were self-employed 'eLancers' providing information services to businesses using a telecommunications link. The remaining 3.8 million were categorised as 'eEnabled self-employed' , that is self-employed people who were dependent on ICTs to work independently but whose work was not primarily information-based. Examples of this category might include craftspeople selling their goods by means of a website.

Collective forms of eWork

One striking result of the EMERGENCE employer survey was that, despite the publicity given to the practice of relocating or outsourcing eWork to non-European destinations such as India or the Caribbean, this is strongly outweighed, numerically speaking, by cases where work is relocated within Europe.

An examination of the reasons for the choice of a remote back office location or an outsourced supplier of eServices also overturns some popular stereotyped views. Several factors were notable by their absence, including: the availability of government grants or other state incentives to choose a location; the time zone in which the region is located; and low staff turnover.

In general, by far the most important selling point is the availability of technical expertise. Next comes low cost, which is followed by a good reputation and then by reliability or high quality.

The views of suppliers of eServices about why they have been selected tend to match those expressed on the demand side fairly closely, the most important difference between the two being the relatively low importance given to their technical expertise by eServices suppliers and a somewhat lower importance given to cost.

The 62 EMERGENCE case studies gave deeper insights into the complex dynamics of employment relocation using ICTs. This research found that both the characteristics and the consequences of such relocations varied considerably depending on the motives of the employer. One important distinction was made between relocations resulting from a major corporate restructuring exercise and those resulting from a single one-off initiative. It was also possible to distinguish between expansion strategies, which tended to be geographically centrifugal, involving a dispersion to different sites, and those involving rationalisation, which were more likely to be centripetal, involving a concentration on a single central site.

The large variety of types of (collective) relocation of eWork identified in these studies may lead to the impression that 'anything goes', *ie* that new ICTs open up a variety of options for relocation and spatial restructuring of work. However, the typology resulting from the analysis of the EMERGENCE case study findings, and the different logics behind the restructuring processes clearly show that not all that is technically feasible is actually likely to be realised. The main trends seem to be the following:

- spatial concentration of activities to yield economies of scale
- expansion and decentralisation of activities to tap remote labour markets or to capitalise on wage differentials and
- getting access to knowledge by way of co-operating over distance.

SMEs in the eEconomy

In general, the empirical data from EMERGENCE support the idea of the knowledge sector as an important cornerstone of the new economy, characterised by a very dynamic use of eWork and trade in telemediated business services. Small knowledge establishments appear to be increasingly important, especially on the supply side of eWork. Knowledge SMEs have clearly succeeded in capturing very important segments of the market in remote business services, especially software development and support and creative work – a category that includes design, editorial work, multimedia content generation and other creative activities such as R&D.

In essence, typical weaknesses of SMEs are becoming less important in the new economy, or they can be mitigated, *eg* by means of networking, whereas typical strengths can increasingly be cashed in. On the basis of our literature survey as well as the empirical results from EMERGENCE, we can therefore conclude that 'small is finally becoming beautiful'.

In fact, however, it might be better to conclude that 'small *can* finally become beautiful'. The literature survey, EMERGENCE data analysis and case studies also show that the group of companies commonly categorised together as SMEs is an extremely heterogeneous one. Whereas a few SMEs indeed specialise in the supply of knowledge intensive business services, the majority still operate in a medium to low technology environment. In line with this, small establishments practice eWork less frequently than big establishments. Many SMEs might not be able to cope with the technological revolution and challenges of globalisation.

On the one hand, a considerable number of SMEs and micro-firms have succeeded in capturing important segments of the market of remote business services, thereby taking up a valuable position in the new, globalising economy. These SMEs are often considered to be the cornerstone of the knowledge economy. On the other hand, there is the simultaneous observation that many SMEs do not work their way through the electronic highway that easily. It is therefore crucially important to gain a better insight into the barriers many SMEs face to make better use of the eService patrimony. If these barriers are not adequately mapped and counteracted by policy, there is a risk of further economic polarisation in which the available government incentives benefit only a small number of economic actors.

National differences in the global eEconomy

As well as exhibiting many common international trends in the practice of eWork, the EMERGENCE research also revealed striking national differences. The report concludes that there is strong institutional shaping of business practices at a national level and that many developments may be path-dependent.

It identifies several distinct European paths to an information society, which can be summarised as follows:

- In one group, we can classify some high-tech, highly developed 'social democratic' economies, which include the Nordic countries of Denmark, Sweden and Finland. These countries are marked by high levels of individualised eWork by employees, perhaps indicative of strong consensensual patterns of collective bargaining and high levels of mutual trust in the work culture.
- A second group, which has been categorised as 'corporatist', is characterised like the first, by a strong 'social dialogue' between the employers and the trade unions, but is marked by more hierarchical occupation-based welfare systems, with entitlement to services being more closely linked to the terms of centrally negotiated collective agreements and employment status and less likely than in the Scandinavian countries to be

offered unconditionally to all citizens. This group covers a spectrum from the Netherlands at one extreme, which, with high levels of eWork, shares many of the features of the first group, to Germany and France at the other, characterised by rather low levels of individual eWork. In between these two extremes lie Belgium and Austria (closer to the social-democratic model) and Luxembourg (somewhat closer to France and Germany).

- The UK and Ireland are often categorised together, along with the rest of the Anglo-Saxon world, as neo-liberal systems, characterised by low levels of labour market regulation, rather low employer investment in training and a 'hire and fire' culture in the face of market changes. In such economies, eWork is more likely to be used to encourage external forms of flexibilisation, such as the hiring of temporary or agency staff and the use of freelancers, than for internal restructuring. The trust-based forms of eWork using permanent employees which are found so frequently in the Netherlands and Nordic countries are somewhat rarer in these countries. Perhaps because they are islands and crossing borders is therefore physically more difficult, the levels of eOutsourcing outside national borders are at or slightly below European averages too. Despite the common language, these countries are significantly different from each other.

- The fourth group also shows significant internal differences and consists of Italy, Spain, Portugal and Greece. Here, Portugal is notably different, with much lower levels of eWork than the countries which border the Mediterranean. Italy, Spain and Greece are also very different from each other in many respects. Nevertheless, they can be seen to have several features in common. One of these is a historically rather slow but now very rapidly-developing use of information and communications technologies which has followed a distinctively different path from Northern Europe. These countries have traditionally been typified by a large informal economy and strong networks of small firms. They are characterised by an extremely high use of eOutsourcing, both to small firms and to individual 'eLancers', but most of this is within national borders rather than internationally, and it seems likely that eWork is being adopted by firms in these countries to exploit technical specialisation. There is thus a highly developed functional division of labour in eServices which are traded between companies and individuals. However, these trading networks are still fairly contained geographically involving, one might surmise, considerable face-to-face or telephone communication to be fully effective. Being even more speculative, we can hypothesise that the typical transactions are those between firms in an established market where the balance of power between suppliers and purchasers is fairly equal.

12. Towards a Future Research Agenda

The EMERGENCE project has covered a great deal of ground during the three years for which it was initially funded by the European Commission's IST programme.

However in the process of seeking answers to its original research questions concerning the extent and characteristics of eWork it has unearthed many new questions.

In this previously under-investigated area, despite carrying out a solid body of empirical research, it has barely scratched the surface of a range of topics requiring deeper and more serious investigation.

In the process of exploring these it has, however, brought about a number of unanticipated achievements.

The first of these has been to bring together at a global level a large number of experts from disparate disciplinary and institutional backgrounds who have discovered common interests. Indeed they have often turned out to have been approaching the same problems from different perspectives. Some of the shared learning from these encounters can be found in the papers from the various EMERGENCE conferences which can be accessed on the project's website (www.emergence.nu). Active participants in this network include statisticians; regional, national and European government policy-makers; representatives from international organisations such as the ILO and UNDP; industrial and development economists; geographers; social scientists; organisational theorists; planners; political scientists; psychologists; labour lawyers; trade unionists; employers; technology providers; consultants; venture capitalists, journalists, women's organisations; and education and training providers. Many of these experts provided direct input into the project's work by participation in its steering group or providing direct feedback on work in progress.

In addition to the multidisciplinarity of its members and its surrounding network, the project team has also broken new ground in the development of interdisciplinary methodologies and conceptual frameworks. In particular, team members co-operated closely in the development of research instruments for the conduct of the case studies, and brought together team

members from very different disciplinary backgrounds for an international training workshop in data analysis.

Through its direct work, and through dialogue with members of its extended network, the project has identified a number of research topics with high policy relevance, some of which are already being addressed by EMERGENCE-related projects. These include:

- The identification of new indicators of eWork and the eEconomy. This topic formed the subject both of a report *Modelling eWork in Europe* (Bates P and Huws U, 2002) and of a discussion paper by the project *Statistical Indicators of eWork* (Huws U, 2001). The STILE[1] project was set up as a direct result of EMERGENCE, and is working closely with National Statistical Offices across Europe and with Eurostat to address these questions in greater detail.
- Further qualitative investigations of collective forms of eWork relocation beyond current EU borders. An extension of the EMERGENCE project to Asia, with the support of the European Commission's Asia-ITC fund, together with the work of the Australian and Canadian EMERGENCE projects is partially addressing this issue.
- Further investigations into the implications of eWork for SMEs, especially micro-enterprises, both in the EU and in Accession States. Again, this question has been partially addressed by extensions of the EMERGENCE project in Belgium, Denmark and Ireland. It is also being investigated by some other IST-funded projects, such as eGAP.
- Further investigations into the impacts of these developments for regional development, especially in peripheral and rural regions. Of particular interest to policy-makers will be questions relating to the critical success factors involved in attracting eWork to any particular region and means for avoiding the development of a polarising regional digital divide, either in the EU or globally.
- Investigations into the implications of these developments for citizenship, worker organisation and representation and the Social Dialogue at regional, national, European and international levels.
- The development of methodologies for analysing national differences in the development of a global knowledge-based economy.

Perhaps more important than any single research initiative will be the development of a continuing dialogue, at both European and

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[1] STILE stands for Statistical Indicators of Labour markets and the eEconomy. Further information about the project can be found on www.stile.be

global levels, within and between the research community and other stakeholders about the future development of a global knowledge-based economy and its likely impact, both qualitatively and quantitatively, on employment, equity and sustainable economic development.

Appendix 1: Logistic models of (different types of) eWork and eSupply

This section presents the results of analysis of the determinants of various forms of eWork and eSupply conducted through the use of logistic regression modelling. To use this technique, we define the variable of interest (in the case of Table A1, whether the establishment practices any form of eWork) as being equal to 1 if true and 0 of false. The model then assesses the effects of a change in the so-called explanatory variables on the odds of an establishment practising eWork. The aim is to assess the separate effect of one explanatory variable (*eg* establishment size) on the propensity of an establishment to practice eWork, while controlling for the effects of all the other factors (*eg* country and sector). We have decided to include two sector-related variables in the analysis: the economic sector and the question whether an establishment is belonging to the so-called knowledge sector (as defined in Appendix I) or to other sectors.

All the explanatory variables that have been used in this instance are categorical and in each case one category has to be chosen as a reference category. We have decided to include the following independent variables and respective reference categories in our logistic models:

- establishment size: >200 employees
- country: Austria (as proxy-variable for the European average[1])
- economic sector: public administration
- knowledge sector: establishments is NOT belonging to knowledge sector.

As to the interpretation of the results, the last two columns in the following tables are of particular interest. The last column, 'Exp(B)' refers to the effects that a particular coefficient has, relative to the reference category, on the 'odds-ratio' of a

[1] Because the score of Austria on the variables eWork, eSupply, eOutsourcing and eEmployees is approaching the European average most closely of all countries participating in the survey (*cf.* respectively Figure 22, Figure 24, Appendix IV Figure A10 & A11), we have decided to pick Austria as the reference category for the explanatory variable country and to treat is as a kind of proxi-variable for the European average.

particular form of eWorking being employed. A value that is greater than one suggests that the category has a positive effect on the odds ratio, while a value of less than one suggests a negative effect on the odds ratio. The statistical significance of the variable is indicated in the penultimate column 'Sig'. Commonly accepted levels of significance are the five per cent level (0.05) and the one per cent level (0.01), *ie* levels at which there is a one in twenty or one in one hundred chance that any association found was the result of chance.

Besides the effects and significance levels of each individual category relative to its reference category, the output tables also present the significance of the effect of the overall explanatory variables, while controlling for the effects of all the other factors.

So, taking 'any eWork' as an example in Table A1, we firstly see that the variables country, establishment size and economic sector exert a separate, significant effect on the propensity to practice eWork. The dummy variable 'knowledge sector' is not impacting separately on the odds of an establishment practising any eWork (*ie* when controlling for the effect of all other independent variables).

When comparing the categories of our explanatory variables, Table A1 shows that being in the Czech Republic has a positive effect, relative to Austria, on the odds of an establishment practising any form of eWork. This effect is statically significant at the one per cent significance level. This is also the case for being in Finland, Greece, Hungary and Poland. At the same level of significance (0.01), belonging to either France, Germany or Portugal has a negative effect, relative to the proxy-variable for the European average, on the odds of practising eWork. By analogy, establishments with 50–100 employees are less likely to practice eWork than large establishment, whereas establishments belonging to the business and financial services sector practice eWork more often than their counterparts belonging to the public administration.

Remark. Logistic regression modelling also allows to estimate the probability of finding eWork (in case of Table A1) for each establishment for which the explanatory variables country, size and sector are known. This can be done on the basis of the following formula:

$$P = \frac{\exp(a + b_1X_1 + b_2X_2 + \ldots)}{\exp(a + b_1X_1 + b_2X_2 + \ldots) + 1}$$

in which

P = the probability of a specified establishment to conduct eWork

$b_1, b_2, \ldots$ = the values listed in the first column of the output tables

$X_1, X_2, \ldots$ = the associated independent variables

a = the constant factor

To give two examples, the probability of finding eWork in medium-sized Finnish knowledge-establishments offering financial services, amounts up to 85 per cent:

$$P = \frac{\exp(-0.01 \cdot 1.44 - 0.01 \cdot 0.28 \cdot 0.09)}{\exp(-0.01 \cdot 1.44 - 0.01 \cdot 0.28 \cdot 0.09) + 1} = 0.8455$$

The likelihood of a large German manufacturing establishment not belonging to the knowledge sector to conduct any eWorking is considerably lower, only 32 per cent:

$$P = \frac{\exp(-0.01 - 0.73 - 0.02)}{\exp(-0.01 - 0.73 - 0.02) + 1} = 0.3186$$

Table A1: Propensity to practice any eWork

	B	S.E.	Wald	Sig.	Exp(B)
Country			717.41	0.00	
Belgium	0.17	0.23	0.54	0.46	1.18
Czech Republic	1.38	0.23	37.34	0.00	3.98
Denmark	0.58	0.41	2.06	0.15	1.79
Finland	1.44	0.31	21.42	0.00	4.23
France	-0.80	0.18	20.44	0.00	0.45
Germany	-0.73	0.17	18.12	0.00	0.48
Greece	1.08	0.24	20.40	0.00	2.95
Hungary	0.82	0.22	13.40	0.00	2.27
Ireland	-0.90	0.41	4.78	0.03	0.41
Italy	0.51	0.19	7.45	0.01	1.66
Luxembourg	-0.86	0.80	1.15	0.28	0.43
Netherlands	0.33	0.24	1.93	0.16	1.39
Poland	0.69	0.18	14.74	0.00	1.99
Portugal	-0.72	0.24	9.16	0.00	0.49
Spain	0.31	0.18	2.89	0.09	1.37
Sweden	0.51	0.24	4.51	0.03	1.66
UK	-0.26	0.18	2.08	0.15	0.77
Establishment size			10.74	0.00	
50-100 employees	-0.22	0.07	10.10	0.00	0.81
100-200 employees	-0.10	0.07	1.91	0.17	0.90
Economic sector			17.19	0.00	
Manufacturing	-0.02	0.10	0.04	0.83	0.98
Business & fin. services	0.28	0.12	5.95	0.01	1.33
Other services	0.01	0.11	0.01	0.90	1.01
Knowledge sector	0.09	0.07	1.62	0.20	1.10
Constant	-0.01	0.19	0.00	0.96	0.99

Table A2: Propensity to conduct telehomeworking

	B	S.E.	Wald	Sig.	Exp(B)
Country			66.84	0.00	
Belgium	0.08	0.58	0.02	0.88	1.09
Czech Republic	−1.14	0.71	2.54	0.11	0.32
Denmark	0.86	0.78	1.23	0.27	2.37
Finland	0.01	0.71	0.00	0.99	1.01
France	−1.91	0.59	10.38	0.00	0.15
Germany	−0.42	0.46	0.83	0.36	0.66
Greece	−2.28	1.34	2.88	0.09	0.10
Hungary	−1.22	0.80	2.30	0.13	0.30
Ireland	−1.67	2.25	0.55	0.46	0.19
Italy	−1.59	0.68	5.52	0.02	0.20
Luxembourg	−2.74	7.21	0.14	0.70	0.06
Netherlands	0.99	0.51	3.71	0.05	2.69
Poland	−7.93	9.03	0.77	0.38	0.00
Portugal	−3.00	2.03	2.19	0.14	0.05
Spain	−2.15	0.75	8.26	0.00	0.12
Sweden	0.02	0.63	0.00	0.98	1.02
UK	−0.15	0.48	0.10	0.75	0.86
Establishment size			4.46	0.11	
50-100 employees	−0.60	0.31	3.86	0.05	0.55
100-200 employees	−0.31	0.30	1.03	0.31	0.74
Economic sector			10.84	0.01	
Manufacturing	0.03	0.42	0.00	0.95	1.03
Business & fin. services	0.37	0.45	0.68	0.41	1.45
Other services	−0.59	0.46	1.67	0.20	0.55
Knowledge sector	0.24	0.25	0.95	0.33	1.27
Constant	−3.18	0.59	29.17	0.00	0.04

Table A3: Propensity to conduct mobile eWorking

	B	S.E.	Wald	Sig.	Exp(B)
Country			225.63	0.00	
Belgium	0.77	0.37	4.41	0.04	2.16
Czech Republic	0.66	0.35	3.59	0.06	1.93
Denmark	1.50	0.50	9.09	0.00	4.48
Finland	0.74	0.42	3.17	0.08	2.11
France	–0.52	0.33	2.47	0.12	0.60
Germany	–0.36	0.31	1.30	0.25	0.70
Greece	0.04	0.41	0.01	0.92	1.04
Hungary	0.17	0.38	0.19	0.66	1.18
Ireland	–0.65	0.93	0.48	0.49	0.52
Italy	–0.31	0.35	0.79	0.37	0.73
Luxembourg	–1.56	2.65	0.35	0.55	0.21
Netherlands	0.94	0.37	6.64	0.01	2.57
Poland	1.07	0.31	11.90	0.00	2.90
Portugal	–0.67	0.51	1.73	0.19	0.51
Spain	–0.04	0.34	0.01	0.91	0.96
Sweden	1.09	0.37	8.93	0.00	2.98
UK	0.58	0.32	3.36	0.07	1.78
Establishment size			0.41	0.81	
50-100 employees	–0.03	0.11	0.07	0.79	0.97
100-200 employees	–0.08	0.12	0.39	0.53	0.93
Economic sector			37.79	0.00	
Manufacturing	0.84	0.25	11.64	0.00	2.31
Business & fin. services	1.30	0.25	26.07	0.00	3.67
Other services	0.79	0.25	10.02	0.00	2.21
Knowledge sector	0.52	0.10	25.72	0.00	1.68
Constant	–3.43	0.38	81.12	0.00	0.03

Table A4: Propensity to have employees in remote back-offices

	B	S.E.	Wald	Sig.	Exp(B)
Country			167.32	0.00	
Belgium	1.46	0.53	7.56	0.01	4.32
Czech Republic	1.47	0.51	8.19	0.00	4.33
Denmark	2.03	0.66	9.41	0.00	7.63
Finland	1.16	0.61	3.62	0.06	3.18
France	0.42	0.50	0.70	0.40	1.51
Germany	0.09	0.49	0.03	0.86	1.09
Greece	0.86	0.57	2.30	0.13	2.37
Hungary	–0.42	0.70	0.36	0.55	0.66
Ireland	–0.03	1.20	0.00	0.98	0.97
Italy	0.37	0.53	0.51	0.48	1.45
Luxembourg	–0.06	2.15	0.00	0.98	0.94
Netherlands	1.63	0.53	9.29	0.00	5.10
Poland	1.61	0.48	11.09	0.00	5.01
Portugal	0.01	0.69	0.00	0.99	1.01
Spain	0.87	0.50	3.02	0.08	2.39
Sweden	2.08	0.52	15.83	0.00	8.00
UK	1.12	0.49	5.22	0.02	3.08
Establishment size			1.01	0.60	
50-100 employees	–0.14	0.14	0.95	0.33	0.87
100-200 employees	0.01	0.14	0.01	0.93	1.01
Economic sector			33.41	0.00	
Manufacturing	0.19	0.23	0.67	0.41	1.21
Business & fin. services	0.86	0.24	12.66	0.00	2.36
Other services	0.22	0.24	0.85	0.36	1.24
Knowledge sector	0.16	0.13	1.58	0.21	1.17
Constant	–3.87	0.52	55.01	0.00	0.02

Table A5: Propensity to have employees in remote telecottages

	B	S.E.	Wald	Sig.	Exp(B)
Country			53.45	0.00	
Belgium	3.64	13.07	0.08	0.78	37.97
Czech Republic	6.30	12.92	0.24	0.63	547.15
Denmark	5.65	13.06	0.19	0.67	282.95
Finland	5.80	12.96	0.20	0.65	329.40
France	4.78	12.92	0.14	0.71	119.56
Germany	4.56	12.92	0.12	0.72	95.41
Greece	0.29	17.66	0.00	0.99	1.33
Hungary	6.33	12.93	0.24	0.62	563.10
Ireland	1.88	19.36	0.01	0.92	6.55
Italy	5.64	12.93	0.19	0.66	280.34
Luxembourg	4.08	14.79	0.08	0.78	59.01
Netherlands	6.59	12.93	0.26	0.61	730.07
Poland	6.93	12.92	0.29	0.59	1022.27
Portugal	4.46	13.04	0.12	0.73	86.06
Spain	5.85	12.92	0.21	0.65	348.16
Sweden	4.90	12.99	0.14	0.71	134.12
UK	4.62	12.93	0.13	0.72	101.93
Establishment size			0.31	0.86	
50-100 employees	-0.20	0.37	0.30	0.58	0.82
100-200 employees	-0.05	0.36	0.02	0.89	0.95
Economic sector			31.27	0.00	
Manufacturing	0.87	1.25	0.49	0.48	2.39
Business & fin. services	2.89	1.23	5.55	0.02	17.93
Other services	2.28	1.22	3.47	0.06	9.78
Knowledge sector	0.13	0.28	0.22	0.64	1.14
Constant	-12.26	12.97	0.89	0.34	0.00

Table A6: Propensity to conduct eOutsourcing to third-party companies

	B	S.E.	Wald	Sig.	Exp(B)
Country			726.57	0.00	
Belgium	0.25	0.23	1.17	0.28	1.28
Czech Republic	1.33	0.22	37.67	0.00	3.77
Denmark	0.29	0.40	0.52	0.47	1.33
Finland	1.67	0.30	31.07	0.00	5.30
France	−0.66	0.18	13.06	0.00	0.52
Germany	−0.60	0.18	11.66	0.00	0.55
Greece	1.14	0.23	24.11	0.00	3.14
Hungary	1.04	0.22	21.92	0.00	2.84
Ireland	−0.66	0.43	2.36	0.12	0.52
Italy	0.56	0.19	8.93	0.00	1.76
Luxembourg	−0.61	0.84	0.53	0.47	0.55
Netherlands	0.26	0.24	1.20	0.27	1.30
Poland	0.89	0.18	24.13	0.00	2.44
Portugal	−0.43	0.25	3.05	0.08	0.65
Spain	0.50	0.19	7.22	0.01	1.65
Sweden	0.43	0.24	3.25	0.07	1.53
UK	−0.35	0.19	3.55	0.06	0.70
Establishment size			13.76	0.00	
50-100 employees	−0.25	0.07	13.05	0.00	0.78
100-200 employees	−0.11	0.07	2.22	0.14	0.89
Economic sector			10.59	0.01	
Manufacturing	−0.13	0.10	1.55	0.21	0.88
Business & fin. services	0.12	0.12	0.98	0.32	1.12
Other services	−0.06	0.11	0.30	0.58	0.94
Knowledge sector	−0.10	0.08	1.68	0.20	0.91
Constant	−0.33	0.19	2.92	0.09	0.72

Table A7: Propensity to conduct eOutsourcing to freelancers (= eLancing)

	B	S.E.	Wald	Sig.	Exp(B)
Country			288.25	0.00	
Belgium	-0.36	0.35	1.02	0.31	0.70
Czech Republic	0.70	0.28	6.19	0.01	2.02
Denmark	0.05	0.57	0.01	0.93	1.05
Finland	0.68	0.35	3.90	0.05	1.98
France	-1.01	0.28	13.32	0.00	0.36
Germany	-1.06	0.26	16.13	0.00	0.35
Greece	-0.25	0.35	0.50	0.48	0.78
Hungary	0.27	0.31	0.77	0.38	1.31
Ireland	-1.56	1.03	2.29	0.13	0.21
Italy	0.75	0.26	8.26	0.00	2.12
Luxembourg	-1.62	2.16	0.56	0.45	0.20
Netherlands	0.05	0.34	0.02	0.89	1.05
Poland	0.39	0.26	2.26	0.13	1.47
Portugal	-1.38	0.50	7.70	0.01	0.25
Spain	-0.04	0.27	0.02	0.88	0.96
Sweden	0.27	0.33	0.65	0.42	1.30
UK	-0.42	0.27	2.39	0.12	0.66
Establishment size			5.35	0.07	
50-100 employees	-0.18	0.11	2.94	0.09	0.83
100-200 employees	-0.21	0.12	3.31	0.07	0.81
Economic sector			4.03	0.26	
Manufacturing	-0.01	0.16	0.00	0.95	0.99
Business & fin. services	0.07	0.18	0.16	0.69	1.07
Other services	-0.15	0.16	0.81	0.37	0.86
Knowledge sector	0.38	0.11	12.84	0.00	1.46
Constant	-1.85	0.28	42.86	0.00	0.16

Table A8: Propensity to supply any eWork (eSupply)

	B	S.E.	Wald	Sig.	Exp(B)
Country			749.55	0.00	
Belgium	−0.12	0.30	0.17	0.68	0.88
Czech Republic	0.24	0.26	0.85	0.36	1.27
Denmark	0.14	0.49	0.08	0.78	1.15
Finland	0.53	0.32	2.71	0.10	1.70
France	−0.82	0.24	11.77	0.00	0.44
Germany	−0.16	0.22	0.51	0.47	0.85
Greece	−1.03	0.37	7.57	0.01	0.36
Hungary	0.66	0.27	6.19	0.01	1.94
Ireland	−0.37	0.56	0.44	0.51	0.69
Italy	−0.62	0.26	5.73	0.02	0.54
Luxembourg	−0.32	1.07	0.09	0.77	0.73
Netherlands	0.40	0.29	1.92	0.17	1.49
Poland	1.82	0.23	65.52	0.00	6.18
Portugal	−0.52	0.33	2.37	0.12	0.60
Spain	−0.08	0.24	0.11	0.74	0.92
Sweden	−0.17	0.32	0.30	0.58	0.84
UK	−0.22	0.24	0.86	0.35	0.80
Establishment size			0.88	0.64	
50-100 employees	0.05	0.09	0.33	0.56	1.05
100-200 employees	−0.06	0.09	0.39	0.53	0.94
Economic sector			23.68	0.00	
Manufacturing	0.41	0.15	7.20	0.01	1.51
Business & fin. services	0.73	0.16	19.80	0.00	2.07
Other services	0.53	0.16	11.47	0.00	1.70
Knowledge sector	1.02	0.08	150.96	0.00	2.76
Constant	−2.18	0.26	70.67	0.00	0.11

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